COMPREHENSIVE COMMENTS OF:
CLEAN AIR TASK FORCE, CLEAN WATER ACTION, CLEAR THE AIR, ENVIRONMENTAL INTEGRITY PROJECT, NATIONAL ENVIRONMENTAL TRUST, NATIONAL WILDLIFE FEDERATION, NATURAL RESOURCES DEFENSE COUNCIL, OHIO ENVIRONMENTAL COUNCIL, SOUTHERN ALLIANCE FOR CLEAN ENERGY, SOUTHERN ENVIRONMENTAL LAW CENTER, AND U.S. PUBLIC INTEREST RESEARCH GROUP

"Proposed Emission Standards for Hazardous Air Pollutants; and in the Alternative, Proposed Standards of Performance for New and Existing Sources: Electric Utility Steam generating Units," 69 Fed. Reg. 4652 (January 30, 2004) and Supplemental Notice, 69 Fed. Reg 12398 (March 16, 2004), Docket No. OAR-2002-0056

June 29, 2004

I. INTRODUCTION

A. The Coal- and Oil-Fired Electric Utility Industry is a Major Emitter of Hazardous Air Pollutants, Including Mercury, that Adversely Affect Public Health.

According to EPA's 1999 "National Emissions Inventory," coal-fired utility units emit about forty-one percent of all anthropogenic mercury air emissions in the United States. EPA estimates that these facilities emit more mercury than any other U.S. source category.

In addition to mercury, EPA's 1998 Utility Air Toxics Study found that utility units emit 66 other HAPs on the list of 188 HAPs included on the Clean Air Act section 112(b) list. EPA assessed the inhalation and non-inhalation pathways for human exposure to these toxic air pollutants, and identified 13 priority HAPs for which the potential health risks demanded more detailed assessment.[1] Specifically, EPA declared arsenic, beryllium, cadmium, chromium, lead, manganese, mercury, nickel, hydrogen

chloride, hydrogen fluoride, acrolein, dioxins, and formaldehyde to be priorities.[2] Of the non-mercury HAPs, EPA identified arsenic, dioxins, and radionuclides from coal-fired units and nickel from oil fired units as highest priority for assessment.

1. Mercury Emitted by Utility Units Causes Adverse Health Effects.

According to EPA, a significant percentage of the mercury emitted from coal-fired utility units is deposited onto land or water bodies, where the chemical form of some amount of the deposited mercury can and does change into methylmercury. Methylmercury is a highly toxic form of mercury that bioconcentrates, or accumulates in the aquatic food web. It is taken in by microscopic animals or plants, which are in turn eaten by larger aquatic animals, which are themselves eaten. Because the rate at which methylmercury is ingested by fish is much faster than the very slow rate at which it is eliminated, larger fish can accumulate significant amounts of methylmercury in their tissues. In this way, methylmercury "can accumulate up the food chain in aquatic systems and lead to high concentrations of MeHg in predatory fish, which, when consumed by humans, can result in an increased risk of adverse effects in highly exposed or sensitive populations."[3] In 2000, the National Research Council of the National Academy of Sciences described the potential adverse human health effects of consuming methylmercury (either directly, or in the case of a developing fetus, through the mother's blood supply) in amounts above EPA's "reference dose" (0.1 micrograms per kilogram of body weight per day, a level designed to reflect the safe amount that can be consumed daily over a lifetime). These effects include neurological and developmental problems

[1] U.S. EPA, "Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units – Final Report to Congress," EPA-453/R-98-004a (February 1998) ("Utility Air Toxics Study") Exec. Summ. at ES-4

[2] *Id*., Table ES-1.

such as poor attention span and delayed language development, impaired memory and vision, problems processing information, and impaired fine motor coordination. Because a developing fetus is the most sensitive to the adverse effects of exposure to methylmercury, which is distributed in the mother's blood supply, and passes through the placenta, women of child-bearing age are a population of most concern. Additionally, because children's brain development continues after birth until at least age 14, children are also a population of concern.

Eating contaminated fish is the primary way that humans and wildlife are exposed to methylmercury. Once consumed, methylmercury remains in the human body for an extended period of time, 140-160 days on average. In June 2003, an international group of 50 scientists wrote to the Joint Expert Committee of Food Additives (a joint committee of the Food and Agriculture Organization of the United Nations and the World Health Organization (WHO)) in support of a tighter WHO standard for the consumption of mercury-contaminated fish. The scientists' letter, (which is incorporated here by reference[4] and attached as Appendix 1) was submitted to provide the WHO with updated research findings (since 2000) on mercury toxicity. The letter addresses emerging data on cardiovascular effects, additional tests on the Faroe Islands children's cohort, and evidence that mercury exposure is widespread in the general public. In addition to the research summarized in this letter, two recent papers point to irreversible brain damage in the Faroe Islands children who were exposed to mercury *in utero*. These results

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[3] NRC Study, Exec. Summ. at 2.

[4] Letter from 50 signatories to Samuel W. Page, PhD., Acting WHO Secretary to JECFA, World Health Organization. Re: 61st JECFA meeting (June 10, 2003).

demonstrate that although mercury affects fetal development in the womb, the damage persists throughout adolescence, and may be permanent.[5,6]

Additionally, in 2003, the United States Centers for Disease Control (CDC) tested the blood mercury levels of a representative sample of women of childbearing age. Based on these CDC data and new research indicating that fetal blood levels are 70 percent higher than maternal levels, in February 2004 EPA scientific staff estimated that as many as 630,000 children may be born each year with unhealthy levels of mercury in their blood (*i.e.*, at or above 5.8 micrograms per liter of blood).[7]

In 2002, over 40 states across the country issued fish consumption advisories. These warnings advise people – particularly women of child-bearing age and children -- to avoid or limit their fish consumption due to mercury contamination of some or all of the fish taken from bodies of water in the state. This number of advisories represents nearly a 60 percent increase from the 27 states with active advisories in 1993. Based on our analysis of active advisories in 2002, this translates into 2,148 mercury advisories in effect for at least:

- 12,111,733 acres of lakes (including statewide advisories), or almost 30% of all lake acres;
- 453,101 miles of river (including statewide advisories), or almost 13% of all river miles;
- 15,639 miles of coastal areas (not including statewide advisories);
- 2,333 miles of our Great Lake coasts and tributaries; and
- 166,534 acres of bayou.[8]

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[5] Grandjean, P. *et al*., Cardiac autonomic activity in methylmercury neurotoxicity: 14-year follow-up of a Faroese birth cohort, 50 J. of Pediatrics 1-169-176 (February 2004).
[6] Murata, K., *et al*., Delayed brainstem auditory evoked potential latencies in 14-year-old children exposed to methylmercury. 50 J. of Pediatrics, 1-177-183 (February 2004).
[7] *See* Kathryn R. Mahaffey, Ph.D, "Methylmercury: Epidemiology Update," Presentation to the National Forum on Contaminants in Fish, at slide 5 (Feb. 2004); *see also*. Mahaffey, K.R., R.P. Clickner and C.C. Bodurow, Blood organic mercury and dietary mercury intake: National Health and Nutrition Examination Survey, 1999 and 2000. 112 Environmental Health Perspectives, No. 5 (April 2004).
[8] U.S. PIRG, Fishing For Trouble, at 3 (June 2003).

Nineteen states -- Connecticut, Florida, Illinois, Indiana, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, North Dakota, New Hampshire, New Jersey, Ohio, Pennsylvania, Rhode Island, Vermont, and Wisconsin -- have issued statewide advisories for all of their inland freshwater lakes and/or rivers for at least one species of fish. Illinois, Florida, and Rhode Island have added, and North Carolina has rescinded, statewide advisories for inland waterways in the last year.[9] Eleven states -- Alabama, Florida, Georgia, Louisiana, Maine, Massachusetts, Mississippi, North Carolina, Rhode Island, South Carolina, and Texas -- also have issued statewide advisories for their entire coastal areas for at least one species of saltwater fish, with Rhode Island being the most recent state to issue such an advisory.

States' mercury advisories also cover greater geographic areas than ever before. Since 2001, the number of river miles under advisory for mercury has increased by 9 percent (up from 414,973 in 2001), and the number of lake acres under advisory for mercury contamination has increased by 19 percent (up from 10,179,247 in 2001).[10]

We note that additional data being collected about mercury exposure continue to confirm significant adverse public health effects.[11] In light of this, and as discussed in detail below, EPA's attempt to back away from aggressive controls on utility mercury emissions is deeply troubling. The direction of the science since December 2000 is entirely supportive of a strong regulatory approach to all power plant HAP emissions, as we will discuss further below. We furthermore are appalled, in light of this evidence, by the docket materials revealing that edits were made to the preamble during the

[9] *Id*.
[10] *Id*.
[11] Letter from 50 signatories to Samuel W. Page, PhD., Acting WHO Secretary to JECFA, World Health Organization. Re: 61st JECFA meeting (June 10, 2003).

interagency review process that intentionally downplayed the serious, confirmed health effects of mercury exposure.[12]

2. Adverse Public Health Effects Of Exposure To The 66 Non-Mercury HAPs Emitted By Utility Units.

According to the 2001 Toxics Release inventory (TRI), electric utilities reported releasing over 700 million pounds of toxic chemicals to the air, making this industry the number one industrial toxic polluter.[13] The health effects of these pollutants vary. Some are known to cause cancer, others impair reproduction and the normal development of children, and still others damage the nervous and immune systems. Many are respiratory irritants that can worsen already existing respiratory conditions such as asthma. Some of these pollutants are of environmental concern because they damage ecosystems and can harm the plants and animals that rely on these ecosystems.

In the 1998 Utility Air Toxics Study, EPA assessed inhalation exposures within 50 kilometers of utility plants, and also estimated the additional inhalation risk and cancer risk due to transported utility air emissions of the pollutants of concern. Two of the 426 coal-fired plants were estimated to pose lifetime cancer risks of greater than one in one million (1×10^{-6}) due to inhalation of the HAPs they emit, with arsenic and chromium contributing most to this risk.[14] Up to 11 of the 137 oil-fired plants analyzed were estimated to pose inhalation cancer risks from nickel of greater than 1 in one million.[15]

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[12] Docket Item OAR-2002-0056-0107. Facsimile copy of the comments on the draft regulatory proposal received during the interagency review.

[13] Clear The Air, "Toxic Neighbors" (2003), Appendix A at 26, Table 3 (available online at http://www.cleartheair.org/reports/toxic_neighbors/tn_tables.pdf.

[14] Utility Air Toxics study at ES-7, ES-8, & Figure ES-2. Under the Clean Air Act, risks in excess of one in one million (or 1×10^{-6}) are generally of regulatory significance. For instance, if the "lifetime risk of cancer to the individual in the population who is most exposed to emissions of such pollutants" exceeds this threshold, 112(c)(9) of the Act provides that the industry cannot be removed from the list of industries under 112(c) requiring MACT regulation.

[15] *Id.* at ES-14.

EPA concluded that while mercury was the "HAP of greatest potential concern," dioxins and arsenic from coal-fired plants and nickel from oil-fired plants are also of potential concern from a public health risk perspective.[16]

Many power plant toxics belong to a class of chemicals that are persistent, bioaccumulative, toxic (PBT) pollutants. PBT pollutants either do not break down at all in the environment (for example, all metals) or break down very slowly (e.g., over decades), like dioxin. Continual loading of power plant pollution to the environment is especially important for PBT chemicals. Electric utilities released over 300,000 pounds of PBT chemicals to the air in 2001.[17] Mercury accounted for the vast majority of these emissions, but power plants released other extremely toxic chemicals such as lead and lead compounds, polychlorinated biphenyls (PCBs), and polycyclic aromatic compounds.[18] Table I-1 below summarizes the health effects of several pollutants released from coal-fired power plants.

[16] *Id*. at ES-27.
[17] Clear The Air, Toxic Neighbors, Appendix A at 26, Table 3..
[18] For a discussion of PCBs, mercury, and other endocrine disrupters, *see* Colburn *et. al*., Our Stolen Future: Are We Threatening Our Fertility, Intelligence, and Survival? New York: Dutton, 1996.

Table I-1. Health Effects of Toxic Air Pollutants Emitted by Coal-fired Power Plants[19,20]

Pollutant	Human Toxicity	
	Acute Effects	**Chronic Effects**
Hydrogen chloride	Inhalation causes coughing, hoarseness, chest pain, inflammation of respiratory and GI tracts, bronchitis, gastritis, laryngeal and pulmonary edema, kidney and liver damage, and shock.	Cancer effects – not classifiable. "This substance/agent has not undergone a complete evaluation and determination under US EPA's IRIS program for evidence of human carcinogenic potential."[21] Chronic occupational exposure has been associated with gastritis, chronic bronchitis, dermatitis, dental erosion and vision damage.
Hydrogen Fluoride	Inhalation causes severe irritation to skin, eyes, nose, throat, larynx, lungs and even GI tract resulting in difficulty breathing, cough, chills, cyanosis, respiratory damage, pulmonary edema, shock and cardiac failure, severe skin & eye burns, nausea, vomiting and diarrhea, and irritability of the nervous system.	Cancer effects—limited evidence of increased lung cancer in occupational groups. Not classified at present. Chronic exposures through drinking water or air can cause bronchial hyperreactivity as well as skeletal fluorosis with increased bone density, calcification of ligaments, weight loss, malaise, anemia, low white count, mottling of teeth.
Arsenic	Acute exposure by inhalation or ingestion results in cough, headache, extreme weakness, burning lips, throat constriction, gastric pain, vomiting, diarrhea, bloody urine, anemia and low white cells, cardiovascular effects esp. arrhythmia, numbness and tingling, muscle cramps, skin eruptions, severe thirst, shock, convulsions, coma, and death.	Known human carcinogen with high potency. Inhalation causes lung cancer; ingestion causes lung, skin, bladder and liver cancer. Chronic exposure results in degeneration of liver and kidneys, toxicity to central and peripheral nervous system, fatigue, headache, dizziness, insomnia, numbness of extremities, irritation to upper respiratory tract & eyes including conjunctivitis, laryngitis and bronchitis, indigestion, thirst, wasting, alterations in blood formation, skin lesions, peripheral vascular disease with loss of blood flow and gangrene of extremities, athereosclerosis and heart attacks (even in children), myocarditis, heart arrhythmia, and diabetes. Evidence of genotoxicity, fetotoxicity and developmental effects.
Beryllium	High inhalation exposure can result in a chemical pneumonitis, cyanosis, pulmonary edema, difficulty breathing, chest pain, bronchial spasm, heart failure, and also dermatitis and eye inflammation.	Cancer effects- Probable human carcinogen, lung. Chronic effects include sensitization and progression to chronic beryllium disease with granuloma-type lung lesions, difficulty breathing, cough, fatigue, weight loss, chest pain, enlarged spleen, liver and heart as well as heart failure. Granulomas can affect organs beyond lungs. Limited evidence of immune system and reproductive/developmental effects.

[19] Acute exposures more frequently occur in occupational settings. The general population can receive acute high exposures as a result of accidental releases or by being exposed to high levels of a toxin in contaminated drinking water.

[20] U.S. EPA, Health Effects Notebook for Hazardous Air Pollutants (and data sources cited therein). Available at http://www.epa.gov/ttnatw01/hapindex.html#

[21] U.S. EPA, Integrated Risk Information System, Hydrogen chloride (CASRN 7647-01-0), available online at http://www.epa.gov/iris/subst/0396.htm#carc (visited June 22, 2004).

Cadmium	Cadmium is more lethal by inhalation than by ingestion. Acute exposure results in headache, vomiting, chest pain, cough, restlessness and irritability, metal fume fever, pneumonitis and pulmonary edema, shock, unconsciousness and convulsions. A single acute exposure to high levels of cadmium can result in long-lasting impairment of lung function and/ or Parkinsonism.	Probable human carcinogen of medium potency for lung and possibly prostate cancer. Kidney damage is the most common chronic effect and this is often associated with high blood pressure. Other chronic effects include difficulty breathing, bronchitis, pulmonary fibrosis, emphysema, anemia, GI symptoms, loss of appetite and weight loss, bone changes and fragility and liver damage. There is some evidence of genotoxicity.
Chromium VI	High exposure to chromium VI results principally in severe irritation or corrosive effects to skin, lungs, GI tract, abdominal pain, vomiting, shock, liver damage, kidney damage and decreased urine output and death.	Chromium VI-by inhalation known human carcinogen of high potency. Chronic effects- inflammation of the respiratory tract, mouth & eyes, bronchospasm, nasal perforation, sinusitis, dermatitis, hepatitis, effects on the kidneys and gastrointestinal tract.
Dioxin	Acute exposure results in headache, dizziness, blurred vision, acute irritation of eyes, skin and respiratory tract, difficulty breathing, diarrhea, vomiting, fever, abdominal pain, muscle and joint pain, impaired muscle coordination, nervousness, irritability, ulcers, numbness and tingling, also cardiac, lung, liver and pancreas abnormalities, skin inflammation and chloracne, personality changes, sleep disturbances, sexual dysfunction, weakness and wasting.	Known human carcinogen – multiple types of cancer, particularly soft tissue sarcomas. It is a cancer promoter. Other chronic effects are likely more serious than cancer effects. Dioxin is the most potent toxic substance known. It is also persistent and bioaccumulative and current human exposures from past releases are at or near levels at which immune suppression and endocrine disrupter effects are known to occur. Other effects- lung, cardiac and liver damage, increased susceptibility to infection, altered glucose and fat metabolism leading to diabetes and atherosclerosis, thyroid disorders, central and peripheral nervous system changes, skin effects including chloracne, male and female reproductive toxicity, decreased fertility, hormonal changes and adverse reproductive outcomes including birth defects and developmental problems.
Lead	High lead exposures by inhalation or ingestion can cause breakdown of red blood cells, liver injury and acute brain encephalopathy with lethargy, vomiting, irritability, dizziness, seizures, coma. Long term effects include epilepsy, retardation and blindness.	Cancer effects- Probable human carcinogen. Chronic effects include central and peripheral nerve damage, kidney damage and effects on blood formation with wt. loss, anemia, weakness, irritability, impaired mental performance including learning difficulties, nausea, abdominal pain, insomnia, anxiety, joint pain, hypertension and immune system impacts. Reproductive/developmental- infertility, decreased sperm motility, premature births and miscarriages.
Manganese	Following inhalation- metal fume fever, pneumonitis, bronchitis, severe/ fatal pneumonia, neurological & psychiatric symptoms, Parkinson-like syndrome, “manganese madness”.	Cancer Effects—not classifiable as a carcinogen Nervous system effects- irreversible Parkinson-like syndrome, tremors, weakness, impaired balance & gait, memory deficits, speech difficulty, irritability, mental disturbances, muscle rigidity & stiffness, peripheral nerve impairment, joint pain, impotence. Also evidence of increased susceptibility to infection. Learning disabilities in children. Newborns particularly susceptible because they absorb more Mn, excrete less and Mn crosses the Blood-brain barrier more easily.

		Birth defects found in animals.
Mercury	Elemental Mercury – High inhalation exposure results in corrosive bronchitis and pneumonitis, central and peripheral nervous system effects, kidney damage, pneumonia, cardiac arrhythmia, shock, GI disturbances and increased blood clotting with infarctions in brain and kidney. Methylmercury- Acute adult exposure results in tremors, numbness and tingling, difficulty walking, visual and hearing impairment.	Elemental Mercury- Cancer effects not classifiable Chronic effects include weakness, tremor, enlarged thyroid, rapid pulse, blood changes, kidney damage, neurological impairments and personality changes. Several immune system effects can occur including sensitization, reduced immunity to infections, and autoimmune disease involving the kidneys. Methylmercury – possible human carcinogen. Chronic exposure results in neurotoxicity in adults—numbness & tingling, clumsy, stumbling gait, weakness & fatigue, vision & hearing loss, spasticity & tremor. Methylmercury is toxic to the fetus and causes neurological developmental effects - vision and hearing difficulties, delays in the development of motor skills and language acquisition, and later, lowered IQ points, problems with memory and attention deficits.
Nickel	High inhalation exposure can result in respiratory distress syndrome, pulmonary edema, metal fume fever, cough, shortness of breath, nasal irritation, sore throat and hoarseness, asthma attack, dermatitis. Sensitization to future exposure can also occur.	Cancer effects- Nickel compounds- known human carcinogens. Elemental nickel- possible human carcinogen (IARC) Lung & nasal cancer & others have been reported-renal, stomach & prostate. Nickel subsulfide is a known human carcinogen (nasal and lung). Chronic effects include lung inflammation & fibrosis, sinusitis, eye irritation, pneumoconiosis, asthma and contact dermatitis. In animals birth defects and increased fetal mortality have been reported.
Selenium	Following inhalation, irritation of lungs and mucous membranes, nosebleeds, difficulty breathing, cyanosis, shock, arrhythmia, cardiac arrest, pulmonary edema, liver congestion, nausea, vomiting, GI disturbances, disorientation, impaired vision, dizziness & coma.	Cancer effects- Selenium sulfide is probable carcinogen. Other forms of Se are not classifiable as to carcinogenicity. Liver degeneration, GI problems, hair and nail loss, dermatitis, CNS effects- depression, emotional instability, nervousness, labored breathing, myocarditis, erosion of long bones, Selenium sensitization, and possibly birth defects.

In the Regulatory Finding, EPA reiterated that chromium, nickel, and cadmium are of potential concern for carcinogenic effects, noting that the cancer risks from exposure to these utility HAP emissions are "not low enough to eliminate those metals as a potential concern for public health."[22] Additionally, the agency stated that dioxins, hydrogen chloride, and hydrogen fluoride are of concern from a public health

[22] 65 Fed. Reg. 79,825, 79,827 (Dec. 20, 2000).

perspective, and that emissions of these HAPs are likely to increase from 1990 to 2010.[23] EPA stated that these risks, as well as the remaining uncertainties, justified a finding that regulating HAP emissions from coal- and oil-fired utility units under section 112 is appropriate and necessary.[24]

There is now also emerging scientific evidence that metals and acidic particles emitted from power plants may play a significant role in the health effects caused by fine particles.[25] The high temperature in smokestacks provides the ideal environment for chemical reactions to take place between various substances especially in the presence of metals. Metals are known to function as catalysts, aiding or speeding up chemical reactions, and tend to be concentrated on the surface of fine and ultra-fine particles. For example, metals have been shown to catalyze the conversion of sulfur dioxide to sulfuric acid. Fine particulate matter has a large surface area that provides the ideal platform for these chemical reactions to take place. Even with low concentrations of sulfuric acid, significant damage can occur to critical areas of lung tissue because these particles are carried to the deepest regions of the lung.[26]

In a recent study, EPA scientists and others concluded that the toxicity of coal fly ash is due primarily to the fine particle fraction and is associated with increased sulfur and trace element content (including zinc and iron).[27] Furthermore, transition metals (a group which includes mercury, cadmium, chromium and nickel) are able to generate

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[23] *Id.* at 79,827, 79,829.
[24] *Id.* at 79,830.
[25] *Particles in Our Air*. *Concentrations and Health Effects.* Edited by Richard Wilson and John Spengler. 1996 , Harvard School of Public Health, Harvard University Press.
[26] *Id*. at 96.
[27] Gilmour, M.I., S. O'Connor, C.A.J. Dick, C.A. Miller and W. P. Linak, Differential pulmonary inflammation and in vitro cytotoxicity of size-fractioned fly ash particles from pulverized coal combustion, 54 Journal of Air and Waste Management Association 286, 286-295 (March 2004).

oxidants in biological systems - causing effects such as alveolitis, airway hyper-reactivity and increased virulence of pulmonary infection leading to enhanced mortality.[28]

In addition, thousands of organic compounds can adsorb to the surface of fine particles. One such group of organic compounds is polycyclic organic matter (POM). This group of compounds is a concern because these compounds are mutagens and carcinogens and persist and bioaccumulate in the environment. Atmospheric transformation also results in the conversion of polycyclic aromatic hydrocarbons (PAHs) to nitro-PAHs, which are also potent carcinogens and mutagens. EPA did not include either POM or PAHs in the multi-pathway risk assessment conducted for the Utility Air Toxics Study.

Despite EPA's statements in the Regulatory Finding about the need to further analyze the health effects of additional HAPs emitted from power plants, the agency in its proposed rule has dismissed out of hand the need to do so. In the preamble to the proposed rule, EPA misleads the public by selectively citing excerpts from the Utility Air Toxics Study that misrepresent the conclusions of that body of work. For example, with regard to public health risks from dioxin, the preamble states:

> As for dioxins, organic HAP, EPA concluded that the quantitative exposure and risk results from such HAP "d[id] not conclusively demonstrate the existence of health risks of concern associated with exposures to utility emissions either on a national scale or from any actual individual utility." (Utility RTC at 11-5).[29]

This statement is very misleading, as it reports only a fragment of what EPA actually concluded. The full text of EPA's conclusions from the 1998 Utility Air Toxics Study is as follows (with omitted statements shown in italics):

> *This analysis of non-inhalation exposures to dioxin emission is a screening analysis. Thus, these quantitative exposure and risk results,*

[28] Wilson and Spengler, *supra,* at 120.
[29] 69 Fed. Reg. at 4,656.

> *because of the many modeling and analytic uncertainties, are very uncertain and* do not conclusively demonstrate the existence of health risks of concern associated with exposures to utility emissions either on a national scale or from any actual individual utility. *The lack of measured data around these sources precludes a comparison with modeled results. These results do suggest that exposures and risks of concern cannot at present be ruled out and that there is a need for development of additional scientific information to evaluate whether risk levels of concern may exist*.[30]

EPA's suggestion now that non-mercury HAPs do not pose risks to public health therefore conflicts with the conclusions of the Utility Air Toxics Study and Report to Congress.[31] EPA's prior study clearly calls for additional analyses for several of the non-mercury HAPs, including dioxin, arsenic, nickel and chromium. The Utility HAP report also cites the need for additional multi-pathway risk assessment, particularly for arsenic and dioxin, and a further evaluation of short-term, high-end peak releases of hydrogen chloride and hydrogen fluoride in particular.

In addition, the risk assessment presented in the Utility Air Toxics Study is itself limited because it did not account for multiple and cumulative exposures associated with power plant emissions. The failure to account for these types of exposure resulted in an assessment that generally *underestimates* the total health risk from power plant emissions. The assessment also does not address many pollutants for which there are

[30] Utility Air Toxics Study at 11-5 (italics added).

[31] Moreover, these distortions are on top of the already watered-down assessments found in the 2000 Regulatory Finding, of the risks posed by exposure to utility HAPs emissions. The original EPA staff draft of the Finding was revised by the Office of Management and Budget during that earlier review process. For example, modifying clauses suggesting uncertainty were added by OMB even to simple statements of accepted scientific fact from the staff draft. *See* Regulatory Finding, OMB Executive Order 12866 Review Draft, Docket No. A-92-55 Item No. I-I-6 at 21, and compare staff draft: "Children exposed after birth are also potentially more sensitive to the toxic effects of methylmercury than adults because their nervous systems are still developing," with OMB changes: "It is also possible that children exposed after birth are also potentially more sensitive to the toxic effects of methylmercury than adults because their nervous systems are still developing."

limited health effects data. However, the lack of data does *not* imply that there is no public health risk.

As discussed elsewhere in these comments, EPA's conclusion that the risks from utility units' mercury emissions make regulation "appropriate and necessary" was sufficient to trigger a statutory duty to promulgate maximum achievable control technology (MACT) standards for each HAP utility units emit. Nevertheless, even if one were to accept EPA's unlawful approach, by which the agency will only regulate those HAPs emitted by utility units that pose a quantifiable danger, it is clear that EPA has ignored important evidence regarding non-mercury HAPs. It is premature and in conflict with prudent public health policy to dismiss potential health risks from the non-mercury HAPs without completely evaluating inhalation and multi-pathway exposures. A complete assessment of power plant emissions must:

- Evaluate the risks from all pathways of exposure to HAP from power plants and quantify the cumulative risks for persistent bioaccumulative pollutants.
- Account for dioxin emissions and their possible generation in electrostatic precipitators.
- Account for exposure to pollutants that disperse more than 30 miles from the power plant – the maximum distance accounted for in EPA's computer models.
- Take into account the health effects of cumulative exposure to multiple HAPs emitted by power plants, by all routes of human exposure - inhalation, drinking water, food ingestion and skin absorption.
- Account for emission increases that occur during start-up, shutdown or upset operating conditions. These occurrences are a normal part of routine operations and should be represented in emissions testing.
- Account for secondary formation of pollutants in the power plant plume.
- Account for overlapping power plant plumes.
- Account for exposure to power plant wastes and water discharges.

B. The Hazardous Air Pollutants Emitted by Utility Units are Associated with Adverse Environmental and Economic Effects.

In addition to the significant public health effects associated with HAPs emissions from the utility industry, mercury contamination and other adverse effects of HAPs exposure cause environmental damage, and impair regional economies. Mercury contamination is a direct threat to recreational fishing—a vital piece of our national and state economies. Recreational fishing is a multi-billion dollar industry. In 2001, the most recent year for which the data is available, approximately 34.1 million Americans took a total of 437 million fishing trips and spent 557 million days fishing. In 2001, recreational fishing in America:

- Generated more than $35.6 billion in spending on food, lodging, and transportation for fishing trips; fishing and auxiliary equipment; and other items;[32]
- Generated more than $116 billion in total economic output;[33]
- Supported more than one million jobs;[34]
- Created more than $30.1 billion in household income (salaries and wages);[35]
- Added more than $1.9 billion in sales tax revenues;[36]
- Added more than $470 million in state income tax revenues;[37] and
- Generated $4.88 billion in federal income tax revenues.[38]

Even a small dent in the recreational fishing industry can mean large economic losses. Of all the money spent on fishing, more than $27.8 billion was spent in states that have issued fish consumption advisories due to mercury. Two of the ten states with the largest number of river miles under advisory -- Florida and Ohio -- are also in the top ten for spending on fishing. Five of the top ten states with the most lake acres (including

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[32] United States Fish and Wildlife Service, 2001 National Survey of Fishing, Hunting and Wildlife Associated Recreation, *available at* http://fa.r9.fws.gov/surveys/surveys.html.
[33] American Sportfishing Association, 2001 Sportfishing in America: Values of Our Traditional Pastime, *available at* http://www.asafishing.org/content/statistics/economic/.
[34] *Id.*
[35] *Id.*
[36] *Id.*

statewide) under mercury advisory -- Minnesota, Florida, Michigan, Texas, and Wisconsin -- are also in the top ten for money spent towards recreational fishing.[39] In fact, nine of the 19 states with statewide mercury advisories covering all of their inland lakes or rivers -- Florida, Illinois, Michigan, Minnesota, Missouri, New Jersey, Ohio, Pennsylvania, and Wisconsin -- also fall in the top twenty states for expenditures on recreational fishing.

EPA's Regulatory Finding also recognized that "wildlife consume fish from a much more limited geographic area than do humans which can result in elevated levels of mercury in certain fish-eating species in localized geographic areas. Those species can include kingfisher, river otter, raccoon, loon, as well as some endangered species such as the Florida panther."[40] Recent studies confirm the seriousness of the adverse effects of methylmercury exposure on wildlife.[41] Wildlife viewing is an essential aspect of many

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[37] *Id*.
[38] *Id*.
[39] *See* U.S. FWS, 2001 National Survey of Fishing, Hunting and Wildlife.
[40] 65 Fed. Reg. at 79,830.
[41] *See, e.g.,* Evers, D., O. Lane, C. DeSorbo, and L. Savoy. Assessing the impacts of methylmercury on piscivorous wildlife using a wildlife criterion value based on the Common Loon, 1998-2002. Final report. Submitted to Maine Department of Environmental Protection, Surface Water Ambient Toxic Monitoring Program. Biodiversity Research Institute (2003); Evers, D., Status assessment and conservation plan for the Common Loon (Gavia immer) in North America. U.S. Fish and Wildlife Service (2003); & Evers, D., Assessing the potential impacts of methylmercury on the Common Loon in Southern New Hampshire. Biodiversity Research Institute (2001) (assessing impacts of mercury exposure on loons).

See also, e.g., Evers, D, D. Yates, and L. Savoy, Investigation of mercury exposure in Maine's mink and river otter. Report BRI 2002-10 submitted to Maine Department of Environmental Protection and Maine Inland Fisheries and Wildlife. Biodiversity Research Institute (2002); Osowski, S.L., L.W. Brewer, O.E. Baker and G.P. Cobb, The decline of mink in Georgia, North Carolina and South Carolina – the role of contaminants, 29 Archives of Environmental Contamination and Toxicology 418 (1995) (assessing impacts of mercury exposure on mink).

See also, e.g., Evers, D, D. Yates, and L. Savoy. Investigation of mercury exposure in Maine's mink and river otter. Report BRI 2002-10 submitted to Maine Department of Environmental Protection and Maine Inland Fisheries and Wildlife. Biodiversity Research Institute (2002); Mierle, G., E.M. Addison, K.S. MacDonald, and D.G. Joachim, Mercury levels in tissues of otters from Ontario, Canada: Variation with age, sex and location, 19 Envtl. Toxicology and Chemistry 3044 (2000) (assessing impacts of mercury exposure on river otter).

See also, e.g., Burger, J. and M. Gochfield, Risk, mercury levels and birds: relating adverse laboratory effects to field biomonitoring, 75 Env't. Research 160 (1997); Thompson, D.R. Mercury in birds and terrestrial mammals. *In:* Environmental Contaminants in Wildlife: Interpreting Tissue Concentrations.

people's outdoors experience – many hikers, kayakers, and other outdoor enthusiasts pursue these activities in order to view wildlife in its natural habitat. Adverse wildlife effects, including lowered reproductive rates and increased mortality of animals such as the river otter or species of waterfowl, also might be expected to generate long-term economic effects in areas local to populations of the affected wildlife species.

C. Statutory and Regulatory Background.

In 1990, Congress established a detailed, technology-based regulatory scheme for the emissions of 188 listed HAPs emitted by stationary sources.[42] HAPs "present a threat of adverse human health effects . . . or adverse environmental effects."[43] Congress directed EPA to publish a list of "all categories and subcategories of major sources and area sources" that emit the listed HAPs.[44] For listed categories or subcategories of major sources of HAPs, Congress further directed that EPA must promulgate rules requiring the maximum achievable reduction in HAPs emissions, known as "MACT" regulations.[45]

Although electric utilities are a major contributor of HAPs, and emit a "significant number of the 188 HAP[s] included on the Section 112(b) list,"[46] Congress required EPA to study "the hazards to public health reasonably anticipated to occur as a result of emissions" from electric utilities before regulating them.[47] The statutory scheme further requires that EPA "shall regulate [the] electric utility [industry] . . . under this section"

Edited by W. Nelson Bayer, G.H. Heinz and A.W. Redmon-Norwood. Lewis Publishers (1996) (assessing impacts of mercury exposure on shorebirds in the Northeastern U.S.).

[42] *See generally* 42 U.S.C. § 7412.

[43] 42 U.S.C. 7412(b)(2); *see also* 61 Fed. Reg. at 68,384 (interpreting this statutory definition to include those pollutants "known or suspected [to] caus[e] cancer, nervous system damage, birth defects or other serious health effects.").

[44] 42 U.S.C. § 7412(c). A "major source" of HAPs is defined in the Act as "any stationary source or group of sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant, or 25 tons per year or more of any combination of hazardous air pollutants." *Id.* § 7412 (a)(1).

[45] *See* 42 U.S.C. §§ 7412(d)(1)-(3), 7412(e)(1).

upon finding that "such regulation is appropriate and necessary after considering the results of" the utility health hazards study.[48] EPA interpreted these provisions to prohibit it from listing utility units as a source category subject to MACT requirements until it completed the required studies.

In 1992, after EPA published its list of source categories for which MACT standards were required, the Natural Resources Defense Council (NRDC) sued the agency for refusing to include utility units on the list. NRDC argued that the source category listing obligation applied to "all" industrial categories containing major sources,[49] and thus EPA's approach to utility units was unlawful. EPA and NRDC settled that litigation, with an agreement that put EPA on a schedule to complete the required studies, make the regulatory finding and promulgate rules in accordance with that finding. Under the agreement, EPA was required to issue its regulatory finding by December 15, 2000, issue a notice of proposed rulemaking by December 15, 2003, and take final action on its proposal by December 15, 2004. On April 27, 2004, in response to EPA's proposal and the agency's public suggestions that it would undertake additional analyses of alternative approaches, NRDC notified EPA that it would treat the agreement as satisfied if the Agency completed final rulemaking by March 15, 2004.[50] The parties subsequently modified the settlement agreement to reflect this date.

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[46] 65 Fed. Reg. at 79,829.
[47] *See* 42 U.S.C. § 7412(n)(1)(A).
[48] *Id*.
[49] *See* 42 U.S.C. § 7412(c)(1).
[50] On April 28, 2004, moreover, the Izaak Walton League of America, the National Wildlife Federation, and Natural Resources Council of Maine filed suit in the U.S. District Court for the District of Columbia, seeking both a declaratory judgment that a MACT standard is required for utility units, and also a court-ordered and enforceable deadline for the issuance of such standards. *Izaak Walton League of America v. Leavitt*, Civ. No. 04-694 (D.D.C.).

Pursuant to the agreement with NRDC, in 1998, EPA completed the health hazards study concerning HAPs emissions from utility units as mandated by Congress in section 112(n) of the CAA.[51] Congress, as part of the 1999 EPA appropriations process, further directed the Agency to fund the National Academy of Sciences ("NAS") to complete an independent study specific to the toxicological effects of one utility HAP, mercury, and prepare recommendations on the establishment of a safe methylmercury exposure reference dose.[52] That study found:

> The population at highest risk [for adverse effects due to methylmercury exposure] is the offspring of women of childbearing age who consume large amounts of fish and seafood. The committee estimates that over 60,000 children are born each year at risk for adverse neurodevelopmental effects due to in utero exposure to [methylmercury].[53]

In 2000, relying on the section 112(n) utility health hazards study, the additional study released by the NAS, subsequent peer review analyses, and other available information including public comment, EPA concluded that "the available information indicates that mercury emissions from electric utility steam generating units comprise a substantial portion of the environmental loadings and are a threat to public health and the environment."[54] In particular, EPA stated:

> [M]ercury is both a public health concern and a concern in the environment . . . and . . . there is a plausible link between methylmercury concentrations in fish and mercury emissions from coal-fired electric utility steam generating units. Although the degree to which that linkage occurs cannot be estimated quantitatively now, the facts are that: There is a linkage between coal consumption and mercury emissions; electric

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[51] Utility Air Toxics Study, *see supra* n.1. In 1997, EPA had completed an additional study, mandated by section 112(n)(1)(B) of the Act. *See*, U.S. EPA, "Mercury Study: Report to Congress" (Dec. 1997). That study addressed "the rate and mass of [mercury emissions from electric utility steam generating units, municipal waste combustion units, and other sources], the health and environmental effects of such emissions, technologies which are available to control such emissions, and the costs of such technologies." 42 U.S.C. §7412(n)(1)(B).
[52] NRC Study, Exec. Summ. at 2.
[53] *Id*. at 327.
[54] 65 Fed. Reg. 79,825, 79,827 (Dec. 20, 2000).

> utility steam generating units are the largest domestic source of mercury emissions; and certain segments of the U.S. population (*i.e.*, the developing fetus, subsistence fish-eating populations) are believed to be at potential risk of adverse health effects due to mercury exposures resulting from consumption of contaminated fish.[55]

Accordingly, the Agency determined that regulation of HAP emissions from utility units under section 112 of the Act is appropriate and necessary.[56] EPA justified that determination on the basis, among other things, that utility units "emit a significant number of the 188 HAP included on the section 112(b) list,"[57] and that "a number of control options . . . will effectively reduce HAP emissions from" utility units, and "because the implementation of other requirements under the CAA will not adequately address the serious public health and environmental hazards arising from [utility HAP] emissions. . . ."[58] The EPA at the same time added utility units to the list of source categories under section 112(c) of the Act, for which MACT regulations must be developed.[59]

Once EPA determined that regulation of electric utilities was "appropriate and necessary," and listed electric utilities as a source category, EPA's obligation to develop MACT standards immediately became effective.[60] Moreover, under section 112(c)(2),

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[55] 65 Fed. Reg. at 79,830.
[56] *Id.*. at 79,830.
[57] *Id*. at 79,829,
[58] *Id*.
[59] *Id*. at 79,826, 79,830.
[60] Section 112(c)(5) states that ". . . the Administrator may at any time list additional categories and subcategories of sources of hazardous air pollutants . . . ." EPA's regulations, 40 C.F.R. 63.40(c), state that "The requirements of this subpart do not apply to electric utility steam generating units unless and until such time as these units are added to the source category list pursuant to section 112(c)(5) of the Act." EPA's actions in requiring case-by-case MACT determinations for new coal fired power plants subsequent to December 2000 demonstrate that the Agency's listing of coal and oil fired utility units was, in fact, under 112(c)(5). *See* Memorandum from John Seitz, Director, U.S. EPA Office of Air Quality Planning and Standards, to EPA Regional Office Air Directors, entitled "Case-by-Case MACT for New Oil- and Coal-fired Electric Utility Steam Generating Units" (August 1, 2001); *see also* Comment Letter on Thoroughbred Generating Station, from Kay T. Prince, Chief, Air Planning Branch, U.S. EPA Region 4 to

"[f]or the categories and subcategories the Administrator lists, the Administrator *shall* establish emission standards under subsection (d) of this section."[61] Subsection 112(d) echoes this obligation: EPA "*shall* promulgate regulations establishing emission standards for each category or subcategory of major sources and area sources of hazardous air pollutants listed for regulation pursuant to subsection (c) of this section."[62]

The Act goes on to specify that the emission standards must be MACT standards: "Emissions standards promulgated under this subsection [(d)] and applicable to new or existing sources of hazardous air pollutants *shall* require the *maximum degree of reduction in emissions* of the hazardous air pollutants subject to this section . . . *achievable*."[63] The Act neither allows nor requires any "decision" to develop MACT standards pursuant to section 112(d), nor does the Act authorize EPA to "decide" not to develop MACT standards for a listed source category, as will be discussed below.

Having committed the agency to issuing a MACT standard for utility units, EPA established a Utility MACT Working Group ("Working Group") in the Spring of 2001, as a subcommittee of the Permits, New Source Reviews, and Toxics Subcommittee of the Clean Air Act Advisory Committee, which itself was established under the Federal Advisory Committee Act (FACA).[64] The Agency's Process and Charge to the Working Group defined the scope of the Rulemaking to include "the oil- and coal-fired subset of fossil fuel-fired electric utility steam generating units defined under section 112(a)(8) of the CAA . . . These units are scheduled for regulation under section 112 (NESHAP) after

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John S. Lyons, Director Department for Environmental Protection, Kentucky Natural Resources & Environmental Protection Cabinet (February 26, 2002) at 1, 2-4.

[61] 42 U.S.C. § 7412(c)(2) (emphasis added).

[62] 42 U.S.C. § 7412(d)(1) (emphasis added).

[63] 42 U.S.C. § 7412(d)(2) (emphasis added).

[64] See documents related to EPA's Electric Utility Steam Generating Units MACT Rulemaking Working Group, to available at http://www.epa.gov/ttn/atw/combust/utiltox.

being added to the list of source categories for such regulation in [the Agency's December 2000 Regulatory Finding] notice . . . ."[65] The Working Group was further directed to consider all the pollutants listed under CAA section 112(b) for regulation. EPA asserted that it expected the Working Group to "meet periodically throughout the project."[66]

The Working Group included 30 representatives (and additional alternates) from various stakeholder constituencies, as follows: 6 state/local/tribal regulatory agency representatives, 8 environmental organization representatives, and 16 representatives from the regulated industry, fuel suppliers, and labor organizations. The Working Group first met on August 1, 2001, and continued to meet regularly through 2002 for a total of 13 meetings.[67] At the October 2002 meeting, the Working Group presented a range of stakeholder recommendations to the Agency for the development of the MACT standard.[68,69] The stakeholder recommendations covered several topics, including subcategorization, MACT emission levels (both at and beyond the statute's so-called "floor"), non-mercury HAPs, methodologies for taking into account variability in emissions, form of the standard, compliance time, and monitoring. The Working Group also recommended approaches for the MACT standard for oil-fired utility units.

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[65] Electric Utility Steam Generating Units MACT Rulemaking Working Group Charge and Process, CAAAC, Permits New Source Reviews and Toxics Subcommittee Federal Advisory Committee, June 2001, at 3, available at http://www.epa.gov/ttn/atw/combust/utiltox.
[66] *Id.* at 3 & 6, Table 2.
[67] *See* http://www.epa.gov/ttn/atw/combust/utiltox/utoxpg.html#CAAAC.
[68] *See* Working Group Final Report at http://www.epa.gov/ttn/atw/combust/utiltox/utoxpg.html#CAAAC.
[69] A diverse group of stakeholders, including representatives of states, industry, and environmentalists, also submitted a consensus document on several key issues, including the MACT floor levels, subcategorization, the form of the standard and a methodology for dealing with variability. *See* Consensus Positions Concerning the Utility MACT Standard, Submitted to the Utility Working Group by Environmental Stakeholders, Clean Energy Group, New Jersey Department of Environmental Protection, STAPPA/ALAPCO, and the Northeast States for Coordinated Air Use Management (Oct. 2002).

Following a break of several months, the Working Group met again on March 3, 2003, and at that meeting discussed the Agency's plans for subsequent work, and planned an April 15, 2003 meeting to discuss these efforts.[70] Among the topics planned for discussion at that meeting were the results of EPA modeling of various proposals for MACT floors based on the alternative recommendations the Working Group had developed.[71] That meeting was abruptly cancelled with very little notice to Working Group members, and not rescheduled.[72] Nor did the Agency ever provide the Working Group members, as a body, further information regarding the development of the proposal. But it is notable that during the entire Working Group process, neither the stakeholders in the process nor EPA ever discussed any alternative to the issuance of a MACT standard for coal- and oil-fired utility units.[73]

D. Despite the Statutory Mandate to Promulgate a MACT Standard, EPA has Proposed Two Alternative Regulatory Schemes.

EPA's regulatory proposal offers three approaches to regulating HAP emissions from utility units. EPA on the one hand proposes establishment of a section 112(d) MACT standard, but only for the mercury emitted by coal-fired utility units, and for the

[70] Electronic mail from Bill Maxwell, US EPA to all Utility Working Group members (April 3, 2003) (forwarding an April 1, 2003 electronic mail from Sally Shaver, US EPA to members of a subgroup of the Utility Working Group concerned about modeling various MACT floor scenarios, announcing EPA's inability to complete model runs in time for the April 15, meeting, and announcing the cancellation of the meeting for that reason (attached as Appendix 2). *See also* electronic mail from Bill Maxwell to Michael Rossler of EEI (April 3, 2003)(apologizing for late cancellation of meeting and room reservation, and noting that Mr. Maxwell had not "been told of the time frame during which [the meeting] would be rescheduled") (attached as Appendix 3). The meeting never was rescheduled.

[71] Maxwell email to Utility Working Group Members.

[72] *See* letter from John Paul, Regional Air Pollution Control Agency, Dayton Ohio (Utility Working Group Co-chair) to Jeffrey Holmstead, Assistant Administrator for Air and Radiation, U.S. EPA (November 3, 2003) (noting that EPA modeling of stakeholder recommendations was supported by the full CAAAC and approved by Holmstead at the October 2003 CAAAC meeting, yet never performed, and that the April 15, 2003 meeting of the Utility Working Group was not rescheduled after its cancellation) (attached as Appendix 4)

[73] Even OMB, despite weakening statements about potential health risks from HAPs exposure, during its review of the EPA staff draft of the Regulatory Finding in 2000 actually strengthened the draft's language

nickel emitted by oil-fired units. Moreover, as we will discuss further below, the minimum or "floor" emissions levels EPA proposes are orders of magnitude less stringent than the statute requires. Under this proposal EPA asserts that total resulting mercury emissions from the coal-fired utility sector would be lowered by 2010 to somewhere between 30 and 34 tons annually (from approximately 48 tons currently emitted).

As a second alternative, EPA asserts legal authority under section 112(n) to fashion a mercury trading program, with caps apparently based on the agency's proposed MACT levels (although that aspect of the alternative is far from clear). This alternative would involve rescinding the decision to list utility units as a source category under section 112(c), which accompanied the December 2000 finding to regulate, but would not rescind the determination that it is appropriate and necessary to regulate such units. Like the MACT approach, EPA claims this would yield total annual mercury emissions from the coal-fired utility sector of between 30 and 34 tons by 2010.[74]

Third, EPA proposes to "revise" the 2000 Regulatory Finding, conclude that regulating utility units under section 112 is not "necessary," and instead encourage states participate in a nationwide mercury pollution trading market, with caps becoming effective in 2010 and 2018. The agency claims authority to create such a regime pursuant to section 111 of the Act, which gives EPA authority to promulgate New Source Performance Standards (NSPS), and emission guidelines for states to follow in regulating existing pollution sources. EPA also finds authority for the establishment of a cap-and-

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with respect to the MACT requirement. See Regulatory Finding OMB Review Draft, supra n. 30 at 25-27 (adding a 3 page discussion of MACT standards under 112(d) and how EPA will pursue that regulation).

[74] *See* 69 Fed. Reg. at 4,661-62

trade program for mercury, under the authority of section 111 of the Act. EPA's caps would be set at approximately 34 tons in 2010 and at 15 tons in 2018.

There are significant flaws with each of the EPA alternative proposals for regulation. The MACT standard is significantly weaker than the statute requires, both because of the mechanics of the MACT floor calculation, in which EPA grossly over-accounts for variability in emissions levels, but also because the Agency completely ignores several HAPs which have been identified as of potential concern. EPA's attempted justifications for either of its cap-and-trade approaches are blatantly outside the law, and will eventually fail.

We discuss these serious shortcomings of the proposal in the following chapters. In Chapter II we critique the Agency's MACT standard-setting approach, and demonstrate that faithfully implementing the CAA would result in very strict MACT floors, to say nothing of beyond-the-floor control. Moreover, we show that even if the agency's basic MACT floor approach were followed, far more stringent emission limits would result. In Chapter III we demonstrate the illegality of EPA's proposal to regulate listed HAPs under section 111. In Chapter IV we demonstrate the illegality of EPA's cap and trade proposals. And in Chapter V we demonstrate that a more stringent set of standards than EPA has proposed here is cost effective.

II. EPA'S ILLEGAL MACT PROPOSAL CAN AND MUST BE REJECTED IN FAVOR OF A MORE STRINGENT MACT STANDARD FOR MERCURY AND OTHER HAPS EMITTED BY POWER PLANTS.

A. Our Proposed MACT Floors for Mercury Reflect the Clean Air Act's Requirements.

As discussed in detail in the sections that follow, faithfully implementing the Clean Air Act would result in a vastly different regulatory program than EPA proposes. First, instead of arbitrarily distinguishing between utility units based on the rank of coal they combust, EPA must consider all existing coal-fired utility units as a single source category subject to regulations. Second, in calculating the MACT "floor," EPA must have a rational methodology for identifying those utility units that it will use as the best performers in the industry; specifically, because EPA proposes to establish output-based emission standards based upon calculated emission rates derived from information EPA has gathered about the coal burned by, and pollution controls in place at, various utility units, EPA must use the same criteria (lowest emitting units, considering coal use data and unit efficiency) in identifying the top performers. Third, EPA may not, in establishing an annual emission standard, base that standard on virtually the worst predicted short-term emissions of the worst of the utility units that EPA identifies as the best performing in the industry. Fourth, EPA must establish MACT standards for all HAPs emitted by utility units. Fifth, the agency must consider control technologies that are capable of reducing emissions below the MACT "floor," and establish final MACT emission rates based on those superior technologies.

Although EPA has not provided sufficient information for us to apply all of these criteria (for instance, we do not have the baseline efficiency of each Utility Unit, nor do we have sufficient data to conclude which above-the-floor technologies should drive the existing source emission standard), we are able to calculate emission rates by correcting several of EPA's errors, and they reveal that a proper MACT standard would achieve dramatic pollution reductions. Specifically, merely by eliminating EPA's unlawful subcategories and variability analysis, we have calculated an existing source "floor" level mercury standard of 0.42 lb/TBtu, which – if variability is accounted by allowing sources to comply on an annual basis – will result in approximately 4 tons of mercury emissions per year, representing a 92 percent cut from present levels. Similarly, "floor" level control for other metal HAPs should result in a 99 percent removal rate.

Because the foregoing emission limits are far more consistent with the CAA than is EPA's proposal, we strongly urge the Agency to promulgate more defensible and protective MACT standards for mercury and also at least for the metal HAPs emitted by utility units.

B. EPA's MACT Proposal is Contrary to Law.

1. Section 112(n) Contains No Authority to Regulate Utility Units Less Stringently Than Other Listed Source Categories.

Several utility interests have argued that the study and regulatory determination requirements in section 112(n)(1) of the CAA provide EPA with the ability to vary otherwise applicable legal requirements for utility units. In particular, they contend that EPA may refuse to set stringent emission standards based on MACT. If EPA is considering relying on this legal theory for its final rule, it may not. Section 112(n)

contains no explicit or implicit cross-reference to any alternative to the promulgation of a MACT standard or standards for electric utility steam generating units. Rather, section 112(n) reflects only Congress' intention to require EPA to make more explicit findings before utility units are regulated under section 112,[1] and Congress's desire to have the opportunity to review the evidence related to utility air toxics prior to an EPA regulatory determination.[2]

In the 1990 Clean Air Act Amendments (CAA), Congress listed the 188 HAPs emitted by certain stationary sources.[3] The Act contains provisions for amending the list to add or remove a HAP,[4] and directs EPA to publish a list of "all categories and subcategories of major sources and area sources" that emit the section 112(b) HAPs.[5] In so doing, Congress enacted a new framework for regulating HAPs, in which industrial categories, not hazardous pollutants, were listed. This framework replaced the previous risk-based approach to regulating pollutant by pollutant, under which only eight HAPs had been listed in 20 years.[6]

The plain language of CAA section 112(c)(2) states that the EPA Administrator "shall establish emissions standards under subsection [112](d)" for each of the listed source categories.[7] Section 112(d)(2) in turn states that the emissions standards to be promulgated must be MACT standards: EPA "*shall* require the *maximum degree of*

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[1] *See* Lisa Heinzerling & Rena I. Steinzor, A Perfect Storm: Mercury and the Bush Administration, 34 ELR 10297, 10398 (April 2004).
[2] *See* 42 U.S.C. § 7412(n)(1).
[3] 42 U.S.C. § 7412(b).
[4] 42 U.S.C. § 7412(b)(2).
[5] 42 U.S.C. § 7412(c).
[6] It is notable that mercury was among the 8 pollutants the Agency had listed between 1970 and the 1990 Amendments. Hon. Henry Waxman, "The Clean Air Act Amendments of 1990: Symposium, An Overview and Critique," 21 Envtl. L. 1721, 1774 & n.244 (1991).(citing 40 C.F.R. § 61.01 (1990).
[7] 42 U.S.C. § 7412(c)(2); *see also id.* § 7412(c)(5) (EPA Administrator "shall promulgate" emissions standards under section 112(d) for source categories added to the section 112(c) list after 1991).

reduction in emissions *of the hazardous air pollutants subject to this section* . . . . that the Administrator . . . determines is *achievable* . . . ."[8] Once a source category is listed, therefore, under the express terms of the Act it is the Administrator's mandatory duty to promulgate MACT standards for the hazardous air pollutants (HAPs) listed in section 112(b)(1), and emitted by that source category. The Agency is not faced with any additional "decision" about whether or not to issue MACT standards for the source category.

Utility interests, however, have argued in the record, and EPA seems willing to concur,[9] that section 112(n) provides an independent, and exclusive source of authority for EPA to regulate utility units.[10] This perspective is not supported by the language or structure of the Act, as discussed above. Nor is there any support for this idea in the legislative history underlying § 112.[11] Indeed, industry simply makes the bald, unsupported assertion that section "112(n) provides EPA with authority to promulgate emissions standards. . . ." [12]

EPA listed utility units under section 112(c), and there is nothing in the text or legislative history to suggest that Congress intended that utility units, once listed under section 112(c), would be regulated in any way other than under the provisions of section 112(d). Certainly Congress in 1990 knew how to describe alternative approaches to HAP

[8] 42 U.S.C. § 7412(d)(2)(emphasis added).
[9] *See* 69 Fed. Reg. 4661-62.
[10] See R. Wyman & C. O'Brien, Latham & Watkins, "A Systemwide Compliance Alternative for Mercury Emissions from Electric Utility Steam Generating Units" ("L&W Systemwide Compliance Memo)(September 4, 2003) at 1-2(attached).
[11] S. 1630, as it passed the Senate, required additional study and report to Congress by the National Institute of Environmental Health Sciences, and required that EPA's standards for power plants be "consistent with" § 112(d). 3 Leg. Hist. at 4432. But S. 1630 as it passed the House replaced that language in favor of the the House bill language with some changes, requiring EPA to study control technologies for and the health effects of HAPs emissions, and requiring that EPA must regulate power plants "under this section" if it found such regulation is appropriate and necessary. 2 Leg. Hist. at 2148-2149.

regulation for specific industries; one need only read section 129 of the Act to see that. But Congress did not set alternative regulatory requirements for utility units – instead Congress directed EPA to complete and consider additional studies prior to making the regulatory determination. In December 2000, EPA made determination and the listing decision, and the legal consequence of that decision was the requirement to develop regulations in accordance with the statutory language and case law interpreting section 112(d).

EPA itself has recognized the plain implications of its decision to list utility units under section 112(c). After the agency's regulatory determination and listing decision, an association of industry interests challenged EPA's action in court, and argued that the court should hear the case at that point because the industry objected to several agency interpretations with "immediate consequences," including EPA's apparent conclusion that the determination "requires the EPA Administrator to regulate [HAP] emissions under § 112(d) of the Act. . . ."[13] In response, EPA confirmed that MACT regulation under section 112(d) was the natural consequence of its listing decision:

> That a decision that regulation of electric utility steam generating units *under section 112* is appropriate and necessary equates with a decision to list them for establishment of standards under section 112(d) is rather obvious from the language and structure of section 112 itself. Section 112(d) provides the core standard-setting authority of that section. It is difficult to see another reading that makes any sense of the phrase "under this section" in section 112(n)(1)(A), and petitioners offer none. *Surely Congress did not intend EPA to invent its own standard-setting program for these units out of whole cloth.*[14]

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[12] L&W Global Compliance Memo at 7.
[13] Petitioners' Joint Response to Respondent's and Intervenors' Motion to Dismiss, *Utility Air Regulatory Group v. EPA*, No. 01-1074 & consolidated case, at 2 (D.C. Cir. May 7, 2001).
[14] EPA's Reply in Support of Motion to Dismiss, *Utility Air Regulatory Group v. EPA*, No. 01-1074 & consolidated case, at 4 (D.C. Cir. May 17, 2001) (emphasis added).

Thus, EPA's suggestion – and the industry's vigorous argument – that section 112(d) standards need not be promulgated, and that section 112(n) permits EPA to issue standards less stringent than MACT, are simply unlawful and must be rejected.

2. EPA's Proposed Subcategories are Contrary to Law.

EPA proposes five subcategories, for both existing and new units, within the industry subcategory "coal-fired utility units".[15] Of the five subcategories, one is based on a process type (integrated gasification combined cycle (IGCC)), and four are based on coal rank;[16] EPA distinguishes units burning bituminous, subbituminous, lignite, and coal refuse (which includes anthracite coal refuse, bituminous coal refuse, and sub-bituminous coal refuse).[17] EPA's proposed subcategorization scheme is an unlawful, arbitrary, and capricious departure from the most basic purposes of the CAA's MACT program.

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[15] In its proposed approach to the MACT standard for utility units, EPA initially distinguished between coal- and oil-fired units. That distinction is supported by the record: coal- and oil-fired units do have vastly different emissions characteristics due to the physical and operational differences between such units. A coal-fired utility unit produces higher emission levels of mercury, for example, than does a comparably-sized oil-fired unit, whereas the oil-fired unit produces higher levels of nickel compounds. Utility Air Toxics Study, Exec. Summ at ES-7, Table ES-1. Moreover, oil-fired units are generally used as "peaking" units (operated when extra electrical power supply is needed, whereas the industry uses coal-fired units as base-load facilities – designed to run continuously except for maintenance intervals.

[16] 69 Fed. Reg. at 4660.

[17] The American Society for Testing and Materials (ASTM) classifies coals by rank, a term which relates to the carbon content of the coal and other related parameters such as volatile-matter content, heating value, and agglomerating properties. Although there are distinctions among coal ranks, there is no precise line dividing the coals, and the various coal ranks have significantly overlapping characteristics. For example, both lignite and sub-bituminous coals have relatively high moisture content and high volatility; because bituminous coal is so similar to anthracite coal based on coal physical characteristics (ash content, sulfur content, HHV), EPA considers anthracite coal to be equivalent to bituminous coal for the purposes of the proposed rule. Coal refuse (i.e. anthracite coal refuse (culm), bituminous coal refuse (gob), and sub-bituminous coal refuse) is also combusted in utility units. Coal refuse refers to the waste products of coal mining, physical coal cleaning, and coal preparation operations (e.g. culm, gob, etc.) containing coal, matrix material, clay and other organic an inorganic material. Previously considered unusable by the industry because of the high ash content and relatively low heat content, it now is being utilized as a supplemental fuel.

EPA's subcategories are based on what are now significantly out-of-date ASTM designations for coal rank, namely D388-77, -90, -91, -95, or –98a. *See* 69 Fed. Reg. at 4727 (proposed 40 C.F.R. § 63.10042)(definitions of coal ranks). These ASTM designations are not available on line at this time, but can only be obtained via library archive or by purchase. EPA seemingly relies on these out-of-date designations because another section of the EPA rules, 40 C.F.R. 60.17, incorporates them by reference.

It is apparent, moreover, that in the process of selecting subcategories, EPA has succumbed to industry pressures to weaken standards applicable to power plants.[18] Not surprisingly, as the effect of this aspect of the rule is to produce much weaker emissions limits than would be the case for a subcategory covering, say, all conventional boilers burning coal, many (but not all) in the electric power industry support subcategorization by coal rank. In the context of this rulemaking, some industry stakeholders submitted a position paper expounding on its rationales supporting coal rank-based subcategorization. EPA appears to have directly imported the industry arguments into this proposal.

a. EPA's proposed subcategorization by coal rank is without rational basis, arbitrary and capricious.

EPA's proposal to subcategorize by coal rank is arbitrary because coal "rank" is not an easily discernible and unwaveringly clear characteristic of coals, and because the choice of combustion technology is not strongly driven by the coal rank burned. Indeed, technical and scientific evidence demonstrates that sources commonly burn a blend of coals, and that coal combustion technologies vary little due to coal rank of the fuel burned. Below, we describe several problems with the agency's proposed subcategorization scheme.

We do not see the logic or basis in relying on difficult to obtain and outdated standards for such a crucial element of the rule. Our comments therefore focus on the present version of the ASTM designations.

[18] *Compare* "Recommendations on the Utility Air Toxics MACT, Final Working Group Report" (October 2002) at slide 11 (Environmentalist and State position on subcategories) *wth* slides 12-13 (Utility Industry fuel-rank based positions). Available online at: http://www.epa.gov/ttn/atw/combust/utiltox/wgfnlprez1002.ppt (visited June 23, 2004).

See also letter to EPA Administrator Mike Leavitt from Senator Jeffords, dated March 16, 2004, attached; New York Times article by C. Drew and R. Oppel, Jr., March 6, 2004, *How Industry Won the Battle of Pollution Control at E.P.A*; "OMB Has Asked EPA to Limit MACT Rule's Scope to 40 Percent Fewer Sources", Risk Policy Report, August 20, 2002; "OMB Asks EPA to Scale Back Scope of Air Toxic Rules, InsideEPA.com (July 22, 2002); "EPA Eyes Air Toxics Exemptions for Host of Industry Sector," Clean Air Report (March 28, 2002).

First, EPA's subcategorization by coal rank is based in part on its assumption that boilers are generally designed to burn only one type of coal. In fact, utilities regularly practice substitution of coal and shift among fuel supplies and suppliers at will, often burning more than one type of coal simultaneously.[19] The purported differences among units that burn different ranks of coal are therefore of little real-world consequence, and EPA's coal-rank based subcategories find no actual support in the facts and therefore are arbitrary and capricious. There is no significant technical difference in the boilers receiving the various types of coal – in fact, the same boilers can and do burn many types of coal. Indeed, EPA itself recognizes that nearly a quarter of the coal-fired units in the nation currently fire different ranks of coal.[20]

Babcock and Wilcox, the manufacturer of various coal-fired power plant components, states that the majority of bituminous, sub-bituminous and lignite-fired conventional units are adaptable to most types of coal.[21] Plant designs have core commonalities such that any differences can be overcome when a company wants fuel options. Some industry representatives argue in the context of this rulemaking, that coal switching and coal blending can cause significant operating problems such as reduced steam capacity, increased slagging and fouling and poorer ignition stability.[22] EPA

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[19] *See* certain utility industry representative comments, contained in a September 6, 2002 letter to US EPA written by utility representatives, including Clean Energy Group member companies: Conective, Consolidated Edison, Inc., Exelon Corporation; Keyspan, Northeast Utilities, PG&E National Energy Group, Public Service Enterprise Group Inc., and Sempra Energy. Available on line at http://www.epa.gov/ttn/atw/combust/utiltox/ceg2epa9-6-02.doc. (visited June 23, 2004).

[20] 69 Fed. Reg. at 4666. EPA proposes language that would, effectively let units that burn a blend of fuels out of the national emissions limits altogether. Proposed 40 C.F.R. § 60.45(a)(5) allows new and existing units burning a blend of fuels essentially to create unit-specific emissions limits based on the proportion of each coal they burn during the compliance period.

[21] S.C. Stultz and J.B. Kitto*, Steam: its generation and use*, 40th edition, (Babcock and Wilcox, 1992), Chapter 13 at 13-3.

[22] Latham & Watkins, "Basis and Rationale for Subcategorization of Coal-fired Electric Utility Steam Generating Units," (March 8,2002) ("L&W Subcategorization Memo") Docket A-92-55II-E-34.

seemingly adopts their arguments without question.[23] However, blaming these issues on coal rank choice completely ignores the numerous factors and operating variables that contribute to slagging and fouling, including air distribution, fuel distribution, coal fineness and excess air which are routinely handled by plant operators.[24]

Industry would like to have it both ways, and EPA seems willing to accommodate them: EPA proposes *both* subcategories based on coal rank, based on the argument that combustion technologies are coal-rank specific, *and* a separate case-by-case alternative floor for units burning a blend of coals,[25] having acknowledged that about a quarter of the industry has managed to overcome this supposed technological constraint.[26] Second, EPA's reliance on relying on the ASTM method to determine coal rank is so technically problematic that it erodes EPA's rationale for subcategorizing by coal rank. EPA itself acknowledges that there is some overlap between the characteristics of different ranks.[27] As a result, it appears likely that it will be difficult to characterize rank of coal for any

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[23] Indeed, EPA found the industry arguments so much to its liking that it included several of them nearly verbatim in its proposal. *See, e.g.,* J. Michael Geers, Cinergy Corp., and Claudia M. O'Brien, Latham & Watkins, "Basis And Rationale For Potential Subcategorization Of Coal-Fired Electric Utility Steam Generating Units," at iv (Mar. 8, 2002) ("The type of coal to be burned has an enormous impact on overall plant design. The goal of the plant designer is to arrange boiler components (furnace, superheater, reheater, boiler bank, economizer, and air heater) to provide the rated steam flow, maximize thermal efficiency and minimize cost. Engineering calculations are used to determine the optimum positioning and sizing of these components, which cool the flue gas and generate the superheated steam. The accuracy of the parameters specified by the owner/operators is critical to designing and building an optimal plant." (footnotes omitted)), available online at http://www.epa.gov/ttn/atw/combust/utiltox/9brh04.pdf (visited June 14, 2004); *see also* 69 Fed. Reg. at 4,665 (virtually identical).

[24] *See Steam: its generation and use*, Chapter 20 at 20-16.

[25] *See* 69 FR 4652,4720 (proposed 40 C.F.R. § 63.99990(a)(5); *see also, e.g.,* 69 FR at 4692 (preamble discussion).

[26] EPA's approach to units that burn a blend of coals is unlawful. The CAA requires EPA to promulgate emission standards for each subcategory of sources that emit listed HAPs, *see* 42 U.S.C. § 7412(d)(1), and those standards are to be based on the best performing units within the subcategory, *see id.* § 7412(d)(3), but EPA does not propose a uniform standard for units burning a blend of coals and does not base the standard, such as it is, on the best-performing blended coal units. In other words, even though EPA effectively creates a subcategory of units burning coal blends, it makes no effort to establish MACT for that subcategory.

[27] 69 Fed. Reg. at 4665.

given shipment, and therefore it may be problematic to determine to which subcategory any given unit belongs, or what standard it must meet at any given time. For instance, the ASTM method classifies coals with the same gross calorific value into different ranks (bituminous and subbituminous) based on their "agglomerating character," which involves a subjective determination.[28] Utility plant operators, furthermore, lack the ability to independently determine the rank of the coal they receive, and will need to rely on the determinations of others; the method depends on assessments that clearly need to take place where the coal is mined.[29] This fact seems likely to complicate any future enforcement of this standard, either by EPA or by citizens, because information related to a key element of the legal requirements applicable to the source (what rank of coal the unit burns) will be in the possession of third parties, not the source itself.

Third, it also is evident from the ASTM method that individual mines can produce coal of different ranks.[30] EPA's justification for the decision to subcategorize based on coal rank[31] -- namely, that many utilities are dependent on particular mines and therefore particular ranks of coal -- is not supported.

Fourth, an industry publication – considered the seminal reference on steam generators –shows some of the overlapping characteristics of different coal ranks.[32]

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[28] *See* ASTM, Standard Classification of Coals by Rank, at § 6.2 (May 2002); *see also id.* at § 8.3 (agglomerating character can be determined by whether tested coal produces, among other things, "a button showing swelling or cell structure").

[29] *See, e.g., id.* at §§ 7.1 (take "preferably five or more" samples . . . either with the same mine or closely adjacent mines representing a continuous and compact area not greater than approximately four square miles in regions of geological uniformity"); 7.1.3 (seal samples "to preserve inherent moisture"); 7.1.4 (do not use "samples from outcrops or from weathered or oxidized coal").

[30] *Id.* at § 7.1 ("In regions in which conditions indicate that the coal probably varies rapidly in short distances, the spacing of sampling points and groupings of analyses to provide average values shall not be such that coals of obviously different rank will be used in calculating average values."

[31] *See* 69 Fed. Reg. at 4666.

[32] *See* S.C. Stultz and J.B. Kitto, *Steam: Its Generation and Use, 40th Edition*, at table 5, page 8-6, (Babcock and Wilcox, 1992) (summarizing variations among coal classifications).

Coals of varying ranks exhibit similar combustion and handling properties.[33] Indeed, as EPA acknowledges:

> because of the overlap in various characteristics in the ASTM definitions of coal rank, certain bituminous and subbituminous coals (for example) exhibit similar handling and combustion properties. Plant designers and operators have learned to accommodate these blends in certain circumstances without significant impact on plant operation or control. [34]

EPA, however, refuses to take account of utility units' inherent flexibility and their operators' ingenuity by establishing subcategories based on coal rank.

Fifth, EPA's treatment of utility units burning different ranks of coal as fundamentally different from one another is at odds with the agency's real world experience implementing the acid rain provisions in Title IV of the 1990 Amendments to the CAA. During the first phase of the sulfur dioxide cap, numerous operators switched to low-sulfur coal to satisfy these requirements,[35] demonstrating that these units are capable of burning a mix of coal ranks to comply with pollution limits, and thus undermining EPA's suggestion that utility units are essentially linked with one kind of coal rank.

Sixth, even if different ranks of coal may initially have different properties, available information indicates that coal treatment technology may allow one coal rank to act in ways that make it more like a coal of a different rank.[36] Research is demonstrating that coal ranks are somewhat fluid; as part of a clean coal technology demonstration

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[33] 69 *Fed. Reg*. 4665.
[34] 69 Fed. Reg. at 4665 & 4692.
[35] Byron Swift, *How Environmental Laws Work: An Analysis of the Utility Sector's Response to Regulation of Nitrogen Oxides and Sulfur Dioxide Under the Clean Air Act*, 14 Tulane Envt'l L.J. 309, 328 (Summer 2001) ("Fuel switching by firms that blended or switched to low-sulfur or medium-sulfur coal contributed 59% of reductions" under Phase I).
[36] *See* ADA-ES, Inc, "ADA-249M Fluxing Additive," available online at www.adaes.com/fluxadditive.html (visited June 14, 2004) ("We have found an inexpensive additive that makes PRB coal slag behave more like bituminous coal.").

program funded by the Department of Energy, at least two companies have developed processes aimed at "upgrading" low-rank coals so that they might be substituted for higher-rank coals.[37] According to a report discussing these technologies, low-rank coal can be treated to the point that it has the same heating value as bituminous coal.[38] Other similar treatment approaches appear to be viable.[39] If these claims are supportable, then there is no rational basis for asserting that the specific rank of coal will so drive technological choices at power plants as to demand subcategorization by rank in crafting a MACT standard for the industry.

Seventh, EPA acknowledges that one of the key considerations in evaluating whether subcategorization is appropriate is to examine whether different units have "differences in the feasibility of application of control technology. . . ."[40] However, the agency ignores this premise by establishing coal rank-based subcategories when available evidence indicates that units burning different ranks of coal are equally amenable to mercury pollution controls. A recent report noted that "[t]he most effective [conventional] pollutant technology for reduction of mercury and other hazardous air pollutants at facilities burning bituminous *as well as subbituminous coals* are fabric filters," with average mercury removal rates of 90 percent and 72 percent, respectively.[41] The report also concluded that "available carbon injection studies have demonstrated that 90% mercury control can be achieved at facilities burning bituminous coal *as well as*

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[37] Clean Coal Technology: Upgrading of Low-Grade Coals (Aug. 1997), available online at http://mfnl.xjtu.edu.cn/giv-doe-netl/publications/others/topicals/topical10.pdf (visited June 23, 2004).
[38] *Id.* at 14 (describing the SynCoal Advanced Coal Conversion Process as being able to change coal with heating value of 5,000-9,000 Btu/lb. to as high as 12,000 Btu/lb.).
[39] *See* ADA-ES, Inc, "ADA-249M Fluxing Additive," available online at www.adaes.com/fluxadditive.html (visited June 14, 2004) ("We have found an inexpensive additive that makes PRB coal slag behave more like bituminous coal.").
[40] 69 Fed. Reg. at 4,664.

facilities burning subbituminous coal when equipped with a fabric filter. . . ."[42] In other words, both high- and low- rank coals can be controlled by the same technology and to a very high degree, a fact which seriously undermines EPA's decision to treat them as fundamentally different.

Finally, while EPA's justification for subcategorizing existing units by coal rank is spurious at best, there is *absolutely* no rationale for doing so for *new* units.[43] New steam producing units can very easily be designed to provide optimum performance when firing all coal ranks. Similarly, EPA tells us that "the industry has some ability during the designing of new units to choose coal or oil that would minimize emissions of Hg or Ni and recognizes that the MACT standard for new units should, to the extent possible, encourage the industry in that direction."[44] While EPA seems to believe[45] that a unit combusting subbituminous coal and a unit combusting bituminous coal are not "similar units," for the purpose of deriving MACT floors for new sources, this conclusion is simply irrational because these units are not just *similar,* they frequently are *exactly the same* kinds of units, with the only difference being that their owners/operators choose different fuel suppliers as they strive to minimize the cost of coal. The same units can and do burn more than one type of coal.[46] Accordingly, EPA must, in establishing new

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[41] Shilpi Bannerjee & Vicki Stamper, "Mercury Air Pollution: The Case for Rigorous MACT Standards for Subbituminous Coal," at 7 (May 2003).
[42] *Id.*at 9.
[43] EPA specifically requests comment on whether to treat new and existing units diffferently with respect to subcategorization. 69 Fed. Reg. at 4667.
[44] *Id.*
[45] As described *infra* in these comments, EPA incorrectly basis its subcategorization scheme on the assumption that power plants burn only one type of coal. In fact, the practice of fuel switching is very common in the utility industry, a practice that allows utilities to seek the less expensive coal. See comments of the Clean Energy Group in a letter to EPA dated September 6, 2002. Available on line at http://www.epa.gov/ttn/atw/combust/utiltox/ceg2epa9-6-02.doc (visited June 23, 2004).

[46] *See id.*

source emission standards, reject subcategorization and establish a single limit for emissions from new coal units.

b. EPA's proposed subcategorization scheme for coal-fired utility units is an abuse of discretion.

Section 112(d)(1) gives the Administrator authority to "distinguish among classes, types and sizes of sources within a category or subcategory in establishing . . . [MACT] standards . . . ."[47] But this authority is not unfettered; the basis of subcategorization must bear a reasonable relationship to the congressional purpose underlying section 112 of the Act. This step in the MACT standard stetting process was not intended to be used in an arbitrary fashion so as to frustrate Congressional intent that HAPs emissions limits reflect the best performers in a listed industrial category.[48] Nor was this authority meant to allow EPA to separate well-controlled and poorly-controlled units into different subcategories; as the agency recently stated:

> Normally, it is legally impermissible to subcategorize based on the type of air pollution control device. See *Chemical Manufacturers Association* v. *EPA,* 870 F. 2d 177, 218–19 (5th Cir. 1989) modified on different grounds on rehearing 884 F. 2d 253 (5th Cir. 1989) (rejecting subcategorization based on type of control device for purposes of the technology-based standards under the Clean Water Act, which are analogous to the CAA section 112 standards). The problem with subcategorizing on the basis of pollution control device, quite simply, is that it leads to situations where floors are established based on performance of sources that are not the best performing. For example, suppose a source category consists of 100 sources using the same process and having the same emission characteristics, but that 50 sources use control device A to control HAP emissions, and 50 use control device B which is two orders of magnitude less efficient. If one subcategorized based on the type of pollution control device, the MACT floor for the 50 sources with control device B would reflect worst, rather than best performance. Although the disparity in levels of emission control

[47] 42 U.S.C. §7412(d)(1).

[48] Hon. Henry Waxman, "The Clean Air Act Amendments of 1990: Symposium, An Overview and Critique," 21 Envtl. L. 1721, 1777 & n.257 (1991), citing CAAA 1990, Pub.L.No. 101-549, sec.301, codified at 42. U.S.C. § 7412(c)(1) , and stating that "[s]ection 112(c)(1) reflects a congressional determination that EPA should, to the extent possible, rely on the broad industrial categories used under the pre-1990 CAA, rather than on a new much longer list of narrow categories and subcategories."

> between the best-performing sources here, and the best-performing sources using wet scrubbers is not this dramatic, the difference is nonetheless evident.[49]

Notwithstanding these limitations, the effect of EPA's proposal to establish MACT floors using subcategories based on coal rank is to make the resulting standards significantly less stringent,[50] by slicing the categories into subcategories defined by a mercury control strategy – the choice of coal -- and calculating separate MACT floors on that basis. This effect runs directly contrary to Congressional purposes in enacting section 112.[51]

The Supreme Court has instructed that "the words of a statute must be read in their context and with a view to their place in the overall statutory scheme."[52] In this case, section 112's focal point is to accomplish MACT-level controls; as Senator Mitchell summarized:

> Title III of the bill moves forward our controls on air toxics by requiring Maximum Achievable Control Technology, or MACT. This is an important development. It is essential that EPA promulgate meaningful MACT standards on time. We have postponed the health test under section 112 of current law in the expectation that MACT will be effective. A weak MACT standard would cause more sources to trigger the [later] residual risk standard. This would postpone needed health protection and would increase costs of toxics controls. The best solution is an aggressive MACT program that protects public health and the environment."[53]

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[49] 69 Fed. Reg. 393, at 403 (Jan. 5, 2004).

[50] In fact, for the subcategories combusting lignite and sub-bituminous coals, the MACT proposal is almost equivalent to an individual MACT exemption or an individual MACT standard for sources.

[51] *See* House Conf. Rep. No. 101-952 at 338, stating simply and unequivocally that "[f]or each category of sources EPA will promulgate a standard which requires the installation of maximum achievable control technology (MACT) but the sources in the category." *See also* Waxman, 21 Envtl. L. 1721, 1776-1777 (noting Congressional concern that EPA might not be able to withstand industry pressure in establishing MACT standards, and particularly noting that Congress did not intend for the authorization to EPA to subcategorize to be used to weaken the resulting MACT standard through the establishment of subcategories on the basis of limited differences).

[52] *See, e.g., Edelman v. Lynchburg College,* 535 U.S. 106, 120-21 (2002) *citing* *Davis v. Michigan Dep't of Treasury*, 489 U.S. 803, 809(1989).

[53] Comments of Senator Mitchell, 1990 CAA Leg. Hist. 731, at 739.

Likewise, Congressman Waxman, a central architect of the Clean Air Act, has noted that while industry interests are likely to advocate for a large number of narrow subcategories within an industrial category,

> "[t]his approach would lead to far less stringent standards for more heavily polluting facilities, and tougher standards for facilities that are already better controlled. Those sources that are already clean would be penalized . . . and requirements for the uncontrolled sources, where tight restrictions are most sorely needed, would be relaxed. This was not Congress's intent, as evidenced by section 112(c)(1), which specifically directs that categories and subcategories established in the [HAP] program are to be consistent with the list of source categories established pursuant to the regulation of new sources under section 111 . . . ."[54]

Thus, the structure and purpose of the CAA evince a Congressional intent to have EPA use its subcategorization authority sparingly.

In keeping with this Congressional purpose, EPA's most recent new source performance standards for the utility industry, the 1998 limits on nitrogen oxides emissions,[55] identified new electric generating units as a single category of stationary sources for regulation. The 1998 NOx NSPS standards therefore are "fuel neutral" – they apply to *all* fossil fuel fired units capable of combusting more than 73 megawatts (250 million Btu/hour) heat input of fossil fuel, regardless of fuel type or coal rank.[56] This was upheld against an industry challenge that fuel-specific subcategories were required.[57] The court noted that EPA's decision not to set fuel-specific standards was based on and justified by improvements in control technologies available on all utility boilers.[58] The same reasoning is fully available to the agency here, although the agency tries its hardest to avoid it by relying on the arbitrary and false distinctions described above. Section

[54] Waxman, 21 Envtl. L. 1721 at 1777.
[55] 40 C.F.R. §§ 60.40a-49.
[56] 63 Fed. Reg. 49,442, 49,443 (Sept. 16, 1998).
[57] *Lignite Energy Council v. EPA*, 198 F.3d 930 (D.C. Cir 1999).

112(c)(1) states that EPA should follow section 111 subcategories *as appropriate*. This express Congressional preference is "appropriate" in the current rulemaking.

Nor may EPA subcategorize by coal rank in order to reduce the costs of the compliance with the proposed rule, as it explicitly does here. EPA explicitly rejects a "no subcategorization by coal rank," option, stating that many coal-fired units do not have the infrastructure currently in place to import coal ranks other than what they currently combust.[59] EPA also states that some units would have to make a retooling to accommodate differing ranks of coal. EPA also states that Hg emissions from "some ranks of coal control are *easier* to control than other types."[60] Not one of these considerations is relevant to MACT standard setting, and in each case EPA is clearly driven by concern about the cost to the unit's owner/operator. EPA's goal is obviously less stringent, less expensive standards to accommodate units which combust lignite and subbituminous coals. This approach directly contravenes the express terms and purpose of this section of the Act, that EPA's main objective must be maximizing the degree of control of the HAPs emitted by a listed source category, and not allowing the subcategorization process to subvert this mandate. Indeed, the language of the statute permits the consideration of cost only after MACT floors are set – well after the decision is made about subcategories.[61] This reflects a Congressional desire to ensure that all facilities in the subcategory improve their emissions at least as well as the best

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[58] *Id*. at 933.
[59] 69 Fed. Reg. 4666.
[60] *Id.* (emphasis added).
[61] *Compare* 42 U.S.C. § 7412(d)(3) (floor setting, no reference to cost, only to performance of best performers in category) *with* 42 U.S.C. § 7412(d)(2) (referencing the cost of emission reduction in the beyond the floor analysis)

performing sources.[62] Industry representatives argue,[63] that the following factors enumerated in § 112(d)(2) apply to the subcategorization process:

> Emissions standards promulgated under this subsection and applicable to new or existing sources of hazardous air pollutants shall require the maximum degree of reduction in emissions of the hazardous air pollutants subject to this section….that the Administrator, *taking into consideration the cost of achieving such emission reductions*, and any non-air quality health and environmental impacts and energy requirements determines is achievable . . .[64]

But both EPA and the D.C. Circuit Court of Appeals have concluded that importation of the "achievability" standard into the floor setting process is not lawful, because it is subsection (d)(3) that applies to floor-setting, not this section of the statute, (d)(2), which applies only to beyond-the-floor standard setting.

Furthermore, EPA has rejected consideration of cost in subcategorization determinations in previous MACT rulemaking actions. For example, in the preamble of the final plywood MACT rulemaking, EPA states that it did not consider cost in subcategorizing categories.[65] Similarly, EPA has argued in court, and the D.C. Circuit has agreed, that consideration of cost in determining MACT floors is impermissible. In the Kraft, Soda and Sulfate and Stand Alone Semichemical Pulp Mills rulemaking, an industry representative commented that that proposal would require substantial

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[62] *National Lime Assn. v. EPA,*, 233 F. 3d. 625, 626 (D.C. Cir. 2000); *see also* recitation of a similar section of the statute in *Northeast Maryland Waste Disposal Authority v. Environmental Protection Agency*, 358 F.3d 936; 2004 U.S. App. LEXIS 3391 (D.C. Cir, 2004).
[63] *See* L&W Subcategorization Memo.
[64] 42 U.S.C. § 7412(d)(2) (emphasis added).
[65] U.S. EPA, "National Emission Standards for Hazardous Air Pollutants: Plywood and Composite Wood Products; Effluent Limitations Guidelines and Standards for the Timber Source Category; List of Hazardous Air Pollutants," at 214 (signed February 26, 2004), available online at http://www.epa.gov/ttn/atw/plypart/plywoodfinalrule.pdf (visited June 26, 2004).

expenditures.[66] EPA responded by saying that a primary legislative goal in creating MACT Floors was to disregard costs.[67] The D.C. Circuit court agreed: in its analysis of the statute, it concurred that costs are only relevant to the CAA's MACT emissions standard setting process in considering beyond-the-floor standards.[68] It is unlawful for EPA to attempt an end run now around this court decision and its own prior interpretation by considering costs in the subcategorization process.

3. EPA's Emission Floors for Existing and New Utility Units are Contrary to Law, Arbitrary, Capricious, and an Abuse of Discretion.

EPA's proposed method for calculating MACT floors for utility units, and therefore the proposed floors as well, are contrary to law. EPA's methodology violates the plain language of the CAA, and is inconsistent with the case law interpreting it.

Clean Air Act section 112(d)(3) stipulates that a MACT emissions limit for a new unit in a listed industrial category "shall not be less stringent than the emission control achieved in practice by the best controlled similar source." For existing units, this "floor" for the standard:

> may be less stringent than standards for new sources in the same category or subcategory, but shall not be less stringent, and may be more stringent than A) the average emission limitation achieved by the best performing 12 percent of the existing sources . . . or B) the average emission limitation achieved by the best performing 5 sources . . . in the category or subcategory for categories or subcategories with fewer than 30 sources"[69]

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[66] U.S. EPA Summary of Public Comments and Responses on the Proposed NESHAP for Chemical Recovery Combustion Sources at Kraft, Soda and Sulfate and Stand Alone Semichemical Pulp Mills, Docket No. A-94-67 (item IV-B-16) at 22.
[67] *Id*.
[68] *National Lime Assn. v. EPA,*, 233 F. 3d. 625, 626 (D.C. Cir. 2000) .
[69] 42 U.S.C. §7412(d)(3).

This section of the statute defines and limits EPA's discretion to determine what is "achievable" with respect to the minimum allowable emissions standard for a listed industry.[70]

Specifically, under this statutory provision, the U.S. Court of Appeals for the D.C. Circuit has held that the crucial inquiry for MACT purposes is to examine whether EPA's standard-setting methodology reflects the performance that the best-achieving sources actually achieve.[71]

As discussed below, EPA's proposed coal-fired utility unit existing source floors do not reflect the performance of the top twelve percent of sources in the same subcategory, even assuming that EPA may properly account for the "worst foreseeable circumstances" in establishing existing source floors. Similarly, EPA's new unit floors do not reflect the performance of the best-controlled similar source under the worst foreseeable circumstances. This is true even if we analyze the existing source and new source floors based on EPA's coal-rank based subcategories, rather than considering all coal-fired utility units as a single subcategory or alternatively if we analyze subcategories based on process type.

The most significant reason why EPA's proposed existing source floors do not meet the statutory requirements is that EPA's methodology for accounting for variability in the performance of the units about which it has information is so overgenerous that it distorts the actual performance of the top 12 percent of the sources in the category. The resulting regulatory floors therefore are orders of magnitude less stringent than the

[70] *See Cement Kiln*, 255 F.3d 855, 861 (D.C. Cir, 2001) (holding that "EPA may not deviate from section 7412(d)(3)'s requirement that floors reflect what the best performers actually achieve by claiming that floors must be achievable by all sources using MACT technology").
[71] *Id*.

average performance of the observed emissions at the best performers in each subcategory. This is an illegal and impermissible approach to existing source floor-setting.[72] In addition to directly contravening the language of the statute, EPA's approach also is arbitrary and capricious, as it results in floors having little or no relationship to the statutory requirement that existing source floors reflect the actual performance of the best performers. Indeed, as we will demonstrate below, there is here the same lack of record evidence supporting the claim that the proposed floors reflect the emission levels of the best-performing 12 percent of existing utility units on the one hand, and on the other, the same level of affirmative evidence that they do not, that has led the D.C. Circuit to strike down prior EPA actions establishing improperly lenient MACT floors for existing units.

Nor do the proposed new source floors reflect the performance of the best performing similar source, even considered under the worst foreseeable circumstances. This is because EPA incorporates the same overgenerous and flawed variability analysis into its new source floors proposal. The net result for both existing and new source floors, is that the EPA approach so distorts the actual performance data that it "bears no rational relationship to the reality it purports to represent."[73]

a. EPA's Variability Analysis Does Not Reflect the Actual Emissions of the Best Performing Units.

The primary reason why EPA's proposed floors do not reflect the actual performance of the lowest-emitting units is because the agency grossly inflates them, supposedly to account for variability in emissions performance at the best-performing

[72] *See id.* at 862 (noting that EPA's method must "allow a reasonable inference as to the [actual] performance of the top 12% of units" (internal quotation omitted)).

units. In brief summary, EPA's approach to adjusting the MACT floors for variability is as follows: (1) EPA calculated short-term emission rates from each facility based on data the agency had about the coal burned there and the pollution equipment in place; (2) EPA ranked these estimates from best to worst, and picked the emission level that was worse than 97.5 percent of the data set, resulting in an emission rate that represented virtually the worst performance the plant experienced; (3) the agency then took this figure for each of its top-performing sources and took the 97.5 upper confidence limit of the mean, supposedly to account for inter-source variability; and (4) EPA then took this calculation and used the result as the basis for an *annual* emission limit. This approach is utterly without legal, policy, or statistical merit. Put simplistically, this statistical manipulation sets the MACT floor by effectively assuming that the worst conditions, experienced briefly by the worst facility in the group, will exist throughout the year. EPA knows, or should know, that the probability of such a situation arising is virtually zero.

EPA's approach is almost identical to the method proposed to it by West Associates (West), a consortium of utility industry interests.[74] The only differences between the West and EPA methods are (1) EPA used a higher percentile (97.5 percent) to represent stack test results, (2) EPA used a higher percentage for the upper limit of the confidence interval for the mean (97.5 percent), and (3) EPA used a slightly different list of best-performing units (than West used) to represent the best performing 12 percent of units. This analysis is described in detail below.

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[73] *Columbia Falls Aluminum Co. v. EPA*, 139 F.3d 914, 923 (D.C. Cir. 1998).
[74] West Associates. Multivariate method to estimate the mercury emissions of the best-performing coal-fired utility units under the most adverse circumstances which can be expected to recur. Prepared by ENSR Corporation, March 4, 2003. A-92-55 Item II-E-118.

First, EPA conducted a significant information collection effort to attempt to understand the technology used by, and the emissions from, utility units. This information collection request (ICR) resulted in two databases. ICR II contains the results of fuel composition sampling at approximately 455 power plants over the course of a year (no stack tests). ICR III contains a collection of short term stack test reports on 80 units selected from the ICR database (three tests per unit).

Second, EPA subcategorized the 80 tested units by coal rank, waste coal-fired units and IGCC units. Within each subcategory, the units were ranked, from lowest to highest, by the average mercury emission rate measured during the stack test. From this ranking, EPA identified what it considered to be the top 12 percent of the best performing facilities. These units are shown in Table II-1.

Table II-1. EPA's Best Performing 12% of Sources by Subcategory

Top 4 Bituminous	Top 4 Subbituminous	Top 5 Lignite	Top Waste Units	Top IGCC
Mecklenburg Cogeneration GEN1	AES Hawaii A	R.M. Heskett Station B2	Kline Township Cogen Facility GEN1	Wabash River 1 and 1A
Dwayne Collier Battle Cogen 2B	Clay Boswell 2	Antelope Valley Station B1	Scrubgrass Generating GEN1	Polk Power 1
Valmont 5	Craig C3	Leland Olds Station 2		
Stockton 1	Cholla 3	Stanton Station 10		
		Stanton Station 1		

Third, EPA used the ICR III stack test database to determine relationships between coal composition and mercury emissions. For those control configurations for which the ICR III data yield robust correlation equations between mercury removal fraction and chlorine, EPA used a correlation equation that predicts mercury removal as a

function of the coal's chlorine, mercury, and heat content. A less sophisticated approach (averaging the mercury removal fractions) was used for the other control configurations. These two methods (correlation equation and averaging) were applied to the ICR II coal composition data for the "best performing units" to estimate the controlled mercury emissions for each individual coal shipment.

Fourth, the estimated mercury emission levels for each unit were sorted to obtain a cumulative frequency distribution. EPA then identified the 97.5th percentile emission rate for each unit; that is, EPA selects the emission rate that is worse than all but 2.5 percent of the estimated emissions from each unit over the course of a year; -EPA assumes that this value is representative of the operation of the unit under the most adverse circumstances reasonably expected to recur. EPA offers no rationale for choosing the 97.5th percentile, as opposed to some other figure, to account for the variability seen in the emission estimates.

Fifth, EPA averaged the 97.5th percentile emission rates of the top-performing units and then calculated an additional 97.5 percent upper confidence limit of this average. The resulting emission rate was proposed as the MACT floor. EPA decided it was necessary to calculate the 97.5 percent upper confidence limit of the mean because the ICR III stack test units represent only a small portion of the full population of coal-fired utility units. EPA states that simply averaging the 97.5th percentile emission rates of the top 12 percent of the tested units would not account for the variability among all of the units in the top 12 percent of the full population of utility units. Again, EPA does not provide any evidence that this calculation is necessary to account for variability between the best performing units. Moreover, there is absolutely no statutory basis for the

manipulation of that data from the facilities for which EPA has data in order to account for the possibility that the data is not representative of the larger group of all affected facilities. Indeed section 114 of the Act authorizes the Agency to collect additional information – and just because the agency has chosen not to do so does not remove its responsibility under section 112(d)(3)(A) to derive the average emission limitation achieved by the best performing 12 percent of existing sources from "the existing sources *for which the Administrator has emissions information*."[75] Nevertheless, EPA calculated a 97.5 percent upper confidence limit for the average of the 97.5th percentile figure, and proposes that emission rate as the MACT floor.

EPA takes the rate it calculates based on these statistical approaches and proposes to make it an annual emission limit for regulated sources.

Together, EPA's statistical gimmicks result in MACT floors that represent virtually the worst short-term emissions from the worst performing of the best units, and assumes that these pollution levels will persist throughout the year. This "worst of the worst of the best" calculation does not satisfy the express requirements of the Act.

EPA then asserts that this analysis can be applied to determine the best performer for use in new source floor setting. But EPA's analysis is so overgenerous that the resulting new unit floor bears no relationship to the actual performance of the best unit under the worst foreseeable circumstances.

Our critique of EPA's floor setting process addresses three fundamental flaws in EPA's approach : (1) EPA's method for initial selection of the best-performing units, (2) EPA's statistical method for addressing variability in emissions and (3) EPA's

[75] 42 U.S.C. § 7412(d)(3)(A) (emphasis added).

overgenerous additive approach to variability, in which it combines the statistical approach to variability with an annual averaging time approach.

(1) EPA did not select the best-performing units for the MACT floor calculation.

EPA asserts that it has, as a first step in the existing source floor calculation, selected the top-performing units. EPA averaged three emission tests for each unit and then arrayed them, within each subcategory, from lowest-emitting to highest. EPA identifies the top 12 percent of the units in each subcategory from the resulting lists, but the Agency does not stop there. Instead, EPA adds a second step, using the methodology described above ostensibly to develop -- just for these units -- the estimated mercury emissions *for each coal shipment* over the course of a year. EPA then used those data to estimate the 97.5th percentile emission rate for each of these "best" units.

This methodology does not identify the best performing unit or units, nor does it identify the emission rate that is characteristic of the best performing unit or units. EPA is really using the predicted mercury emission rates *for each coal shipment* to determine the MACT floor, not the actual emission rates measured during the stack test. It is inconsistent – arbitrary and irrational -- to use stack test results to select the best performing units, but then create an entirely new data set of predicted emission rates and use those data to set the MACT floor.

For the sake of argument and comparison only, we use an alternative approach to identify best performers based on EPA's coal shipment data. This requires analyzing the coal shipments to each of the tested plants and applying the mercury/chlorine regression equation (or control device efficiency as appropriate) to estimate the mercury emissions from each coal shipment. For each tested unit, the predicted mercury emissions for each

coal shipment would then be averaged to develop an annual average emission rate. The resulting mean annual emission rate predicted for each tested unit would then be arrayed from lowest to highest and the top 12 percent of the units in each subcategory could be identified.

To see how our posited alternative methodology is a better predictor of top performing units (as measured by the lowest average annual emission rate derived from coal data) one can examine the data from the Texas-New Mexico Power TNP-1 unit. An analysis of the coal data for this unit revealed that during the stack test for the purposes of reporting to the ICR II dataset, this unit was burning lignite with a mercury concentration that was 700 percent higher than the mercury concentration of the coal typically burned in this unit. The average mercury concentration of 99 coal shipments to this unit in 1999 was 0.035 ppm. During the ICR stack test, the unit burned lignite with a mercury concentration of 0.25 ppm. As a result, the amount of mercury in the coal was measured at 26.6 lbs./TBtu during the ICR test, compared to an average coal mercury content of 3.6 lbs./TBtu for the entire year. The controlled mercury emission rate for this unit as reported in the ICR is 10.86 lbs./TBtu – the *8th highest emission rate for a lignite unit*.

By contrast, if one estimates mercury emissions from this unit for every coal shipment, and these estimates are averaged, the average annual emission rate is 1.29 lbs./TBtu – *which would be the best performance of any lignite-fired unit*. To reiterate, the same unit, over the same time period, is either the 8th highest emitter (under EPA's approach), or the very best performer (under our alternative approach), simply by changing the methodology for identifying superior performance. This example illustrates how using EPA's proposed regression analysis to calculate the annual emission rate of a

larger universe of tested units radically changes the resulting list of best-performing units. Furthermore it demonstrates the arbitrary nature of the method EPA has proposed for this purpose.

(2) EPA's Statistical Method for Accounting for Emissions Variability is Arbitrary and Capricious, Contrary to Long-standing Agency Policy, and Yields Results that Bear No Resemblance to the Best Sources' Actual Performance.

EPA's method of addressing variability results in proposed emission rates that do not reflect the actual performance of the top 12 percent of the best performing units. EPA's methodology wildly inflates the emission rates of the tested units such that the final calculated rates bear no resemblance to the actual performance of the units. The EPA's variability analysis results in emission rates for three coal subcategories that are roughly two to 16 times higher than either the mean or median actual emission rates of the top 12% of the best performing units in each subcategory. For waste coal-fired units and integrated gasification combined cycle (IGCC) units, the proposed MACT emission limits are roughly *five times higher* than the average observed emission rate of the *worst* performer in each of these subcategories.

By taking the 97.5th percentile of the emission rates for each unit and then the 97.5th upper confidence limit of the average of these rates, the Agency has in effect selected the worst of the worst emission rates of its identified "best" units.[76] The fact that this method yields results utterly unrelated to the peformance of the best performing units dooms it legally. This was explicitly pointed out to the Agency during interagency review. One commenter wrote:

[76] And this is only true if it can be assumed that EPA has actually identified the "best" performers, which we assert it has not.

> *"Pages 96-100: The variability argument seems like a stretch. 112(3)(d)* [sic] *makes no mention of using worst-case scenarios. Why not mean value instead of high-end value? Weak claim of "representative" value. The phrase, "…with only the upper confidence interval having meaning" is either wrong or makes no sense. Also, (on page 115), there is a multiplicative effect of using two 97.5% confidence interval assumptions that puts the final value well above 97.5% confidence interval of true value."*[77]

In addition, in arriving at its proposed MACT floor, EPA calculates the 97.5th percentile upper confidence limit of the four 97.5th percentile observations for each of the selected plants. In other words, EPA first arrays the individual "observations" based on coal samples throughout the year and selects the 97.5th percentile value from each plant. EPA then calculates the standard error *as if there were just one observation for each plant* – the 97.5th percentile value from each plant. This could only be justifiable if EPA were promulgating an emission standard that must be met continuously, as a high-end emission standard would guard against short-term exceedances of a continuous standard. But that is not what EPA has proposed.

EPA furthermore did not follow its own well-established practice and the advice of its own Office of General Counsel when it proposed to adopt this approach. The use of the 97.5th percentile instead of the mean value is contrary to longstanding agency policy as outlined in the 1993 Regulatory Policy Notebook of the Emissions Standards Division of U.S. EPA's Office of Air Quality Planning and Standards. In that document, EPA's Office of General Counsel (OGC) indicated that the arithmetic mean should be used to average the actual emissions performance of the best 12% of existing units in a

[77] Facsimile of comments from the interagency review of the proposed rule. Unknown commenter. Page 11 of 717. Docket item AOR-2002-0056-0107.

category.[78] There is no mention of using a statistical approach involving the 97.5th percentile to account for variability in emissions.

(3) EPA's use of an annual averaging time in combination with the variability methodology is unsupportable.

One way to account for variability in emissions performance is by selecting longer time periods over which compliance is determined. EPA has recognized that annual averaging time by itself "smooths" out variability in emissions. In a memorandum to this docket describing the variability approach, EPA states:

> *Addressing variability in the compliance method would involve allowing an averaging time for compliance that would accommodate variations in pollutant emissions over time. For example, averaging over a month or a year of data will provide an opportunity for variations in the amount of a constituent in the fuel to be accommodated without exceeding the emission limitation. This method of addressing variability is not covered in this memorandum.*[79]

In other words, having made clear that the Agency is fully aware that one method for dealing with variability is through the length of the compliance period, EPA expressly chose not to assess that option. Indeed, EPA does not analyze the concept of accounting for variability in emissions using averaging time alone *anywhere* in either the proposal or docket, despite the fact that stakeholders in the Utility Working Group suggested such an approach.[80] Instead, EPA simply *adds* an annual averaging time on top of its already too-generous-by-half variability approach, and attempts to justify this double counting by

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[78] EPA, Regulatory Policy Notebook Document #13(a) SP (September 17, 1993).
[79] Memorandum from William H. Maxwell to Utility Project Files, November 26, 2003. Docket A-92-55, Entry II-B-8.
[80] "Recommendations on the Utility Air Toxics MACT, Final Working Group Report" (October 2002) at slide 11 (Environmentalist and State position on subcategories) and slides 12-13 (Utility Industry fuel-rank based positions). Available online at: http://www.epa.gov/ttn/atw/combust/utiltox/wgfnlprez1002.ppt (visited June 23, 2004).

saying that mercury poses a chronic, not an acute health effect.[81] Setting aside the question whether this justification is based in fact and whether it justifies an annual standard, the agency neglects the effect of using a long-term standard on the stringency of that standard. In doing so, EPA acts outside the requirements of the statute, which clearly defines the stringency of the resulting floor, by double counting for variability.

It is not that the Agency does not understand what it is doing here. In a recent rulemaking, in fact, the Agency specifically noted the effect that the averaging time has on the stringency of the standard. Agreeing with public comments that a proposed MACT rule for mercury cell chlor-alkali plants should not require short-term compliance when the emission standard reflected annual emission rates, EPA stated:

> *The commenters are correct in that the normalized mercury emissions used to establish the standards were based on annual average emissions and annual actual chlorine production. Therefore, the commenters' concerns about the variability of the control systems over a year and the ability to comply on a daily basis with this limit have merit. We considered the two options offered by the commenters (a 365-day compliance period and adjustments to account for daily variations).*
>
> *We do not feel that it would be appropriate to apply a generic multiplier to the limit for mercury cell chlor-alkali plants to account for short-term variation. In addition, mercury cell emissions data were not available to assess the variability in emissions from these emission points. Therefore, we concluded that the emission limitation should reflect an annual average. This would be consistent with the data used to create the emission limitation and would allow for short-term variations in operations and control device performance.*[82]

In other words, even the Agency recognizes that a longer averaging time for compliance is an *alternative* approach to a method involving manipulation of actual input or emissions data. But in the face of this, EPA instead proposes to use *both* methods – thereby effectively double counting for variability, and producing an end result that has

[81] 69 Fed. Reg. at 4668.

no rational relationship to the actual performance of the top performing units. And because EPA proposes to determine compliance using a long-term average, the compliance status of a unit will be unaffected by short-term fluctuations in the coal characteristics of coal shipments and control equipment.[83]

Finally, EPA's own actions in this rulemaking demonstrate that its existing source standards arbitrarily and capriciously account for variability. EPA proposes to establish new source MACT floors that are significantly more stringent than the agency's proposed existing source standards and, by doing so, implicitly concedes that such emission rates are achievable on a regular basis by all utility units. To take an example, EPA's proposed new source emission standard for bituminous-fired units is, on an output basis, 6.0×10^{-6} lb/MWh, whereas its proposed existing source standard is 21×10^{-6} lb/MWh. EPA does not suggest that there is anything unique to new sources that makes them capable of meeting a more stringent limit when existing units cannot. To the contrary, "EPA believes that the character and levels of Hg and Ni emitted by new coal- and oil-fired units will be similar to those emitted by existing coal- and oil-fired units because the source of Hg and Ni is primarily related to the fuel," and "EPA anticipates the use of primarily the same fossil fuel sources for new units as are being used for existing units."[84] EPA's decision to inflate its standards for existing sources supposedly to account for unavoidable variability at such sources, therefore, is completely irrational.

(4) The Department of Energy's Suggested Treatment of Variability Also Must be Rejected.

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[82] 68 Fed. Reg. 70, 903, 70,920 (Dec. 19, 2003).
[83] This, in fact, further subverts EPA's already spurious rationale for the need to subcategorize by coal rank..
[84] 69 Fed. Reg. at 4677.

EPA also solicits comment on a proposed methodology developed by the Department of Energy (DOE), and submitted to the docket by DOE as a suggested alternative method to account for variability in unit or source performance. EPA describes DOE's approach as follows:

> "The essence of the DOE analysis was to average at a plant level the Hg and Cl contents of all coals, by rank, in the ICR data base. Then, DOE adjusted the performance test results at the lowest emitting units in the ICR data base by assuming that they burn a coal similar to the 97.5th percent worst plant annual average coal."[85]

As we understand this method, DOE used ICR stack test data to identify the "best performing" units. Considering the control technology used at those units, DOE then attempted to estimate what these units would emit if they were burning the worst-case coal of the same rank, which DOE identified by examining the 97.5th percentile of the most-polluting coals *from all plants*.

EPA's request for comment on this issue is a telltale sign of the issue's unlawfulness; the agency specifically asks whether a leading court decision, *Cement Kiln Recycling Coalition v. EPA*,[86] is applicable to the DOE approach. It is.

In *Cement Kiln*, the U.S Court of Appeals for the D.C. Circuit held that EPA had violated the MACT requirements of the Act by establishing emission standards that were based upon the emissions of the most polluting sources among those using what EPA had identified as the best technology. The court held that EPA's fundamental obligation in establishing MACT is to reflect the emissions performance achieved by the best performing sources.[87] As a consequence, the court found that simply looking at the

[85] 69 Fed. Reg. at 4674.
[86] 255 F.3d 855 (D.C. Cir. 2001).
[87] *Id.* at 861-62.

emissions from the worst of the sources that used the same technology as the top performers was an inappropriate way of approximating the emissions performance of those top performers, because factors other than technology – such as the use of other control devices, operator training, and source design– could contribute to the top units' superior emissions performance.[88] The court stated: "the relevant question here is not whether control technologies experience variability at all, but whether the variability experienced by the best-performing sources can be estimated by relying on emissions data from the worst-performing sources using the MACT control."[89] Thus, the essence of *Cement Kiln* is that MACT floors must reflect the actual emissions achieved by the best performers and cannot use worst-case data where it cannot be demonstrated that such data are a reasonable estimate of the best sources' variability.

DOE's proposed variability analysis utterly fails to meet the standards prescribed by the court in *Cement Kiln*. Under DOE's approach, floors would not reflect the actual emissions of the best-performing sources, but instead would be an approximation of what those sources would emit if they were burning virtually the dirtiest coal in the industry. Neither DOE nor EPA explains why this calculation should be accepted as a reasonable approximation of what occurs at the best units. Moreover, because EPA asserts that "the variability of Hg emissions from coal fired units is significantly influenced by the variability over time in the composition of the coal burned as fuel,"[90] the use of the worst instances from the entire database of coal shipments – not just those to the top-performing sources – seems designed to reflect the most egregious variability of

[88] *Id.* at 864-65 ("whether variability in the MACT control accurately estimates variability associated with the best-performing sources depends on whether factors other than MACT technology contribute to emissions").
[89] *Id.* at 865.

emissions in the industry as a whole, but not the variability amongst the best sources. Put differently, it is entirely possible that the best performers achieve their superior emissions at least in part by burning cleaner coal. Using a calculation that simply assumes they burn dirty coal therefore is an unreasonable way to estimate their emissions, even accounting for variability between these top performers.

b. EPA'S Method for Converting the MACT Floors to an Output-Based Standard is Unlawful.

EPA asserts that an output-based form for the MACT standard can "provide a regulatory incentive to enhance unit operating efficiency and reduce emissions."[91] While we agree with this assertion in principle, EPA's conversion of its MACT floors to a set of output-based floors is based on an approach which renders the standards unlawful. For instance, EPA establishes output-based floors by first deriving input-based floors, then applying an assumed efficiency factor, thereby treating each unit as though it is equally efficient. This results in an additional weakening of the standard, because the efficiencies EPA relies on do not reflect the efficiencies of the best performing similar new or existing units.

Specifically, EPA uses 32 percent as its baseline efficiency for existing units and 35 percent as its baseline efficiency for new units. EPA's justification for these choices is limited to unsupported assertions in the preamble that "most existing electric utility steam generating plants fall in the range of 24-35 percent efficiency . . . . new units operate around 35 percent efficiency."[92] By contrast, in developing its Annual Energy

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[90] 69 Fed. Reg. at 4672.
[91] 69 Fed. Reg. 4667 c/2.
[92] *Id.* at 4668 c/1. But this is contrary to facts in the record, which contains a memorandum from William Maxwell to the Utility MACT Project Files, covering a table prepared by DOE in which average fleet efficiencies for 1996 are documented at approximately 38 percent. Docket No. A-92-55, Item II-B-12.

Outlook, the Energy Information Administration (EIA) assumes that a new scrubbed coal plant with selective catalytic reduction will have an efficiency of 38 to 40 percent.[93] For new integrated gasification combined cycle units, the EIA assumes an efficiency of 42.5 percent.

EPA must revise its methodology to incorporate the best performers – the top of the range of these more accurate efficiency factors.

Left as it is, moreover, EPA's consideration of efficiency is contrary to law, because it does not occur within the framework of the MACT requirements. If the emission standard is based upon efficiency, then the MACT standard must reflect the lowest-emitting units, when considering both efficiency and pollution control. This means that EPA must account for efficiency in selecting the best performing 12 percent of sources for the purpose of setting an efficiency-based standard, since the units that have the lowest output-based emissions may be different than those that have the lowest input-based emissions. In addition, even if considering efficiency does not change the identity of the facilities used to derive the MACT floor, the ability of sources to improve their efficiency must be considered when examining techniques that achieve above-the-floor control.

Furthermore, EPA entirely defeats the purpose of promulgating an efficiency-based standard by making it optional for existing facilities; the agency should not finalize this portion of its proposal. As EPA notes, "owners/operators of existing units would have the option of complying with either the input- or the output-based limit;

[93] U.S. Energy Information Administration, "Assumptions for the Annual Energy Outlook 2002," DOE/EIA-0554 (2003).

owners/operators of new units would be subject to the output-based limit."[94] Under this approach, rational owners and operators of affected facilities will simply choose the emission standard that requires the least of them; sources that achieve less than the average efficiency used to convert EPA's input-based standard to an output-based one will have an easier time complying with the input-based limit (and will likely choose that compliance option), while sources that are more efficient than the average will be more able to meet the output-based limit (and will likely choose that approach).

Finally, the Agency also requests comments on how often the baseline efficiency should be reviewed and revised in order to account for future improvements in electric generation technology. Given the technology-forcing nature of the this section of the statute, and the statute's clear directive for the most protective emissions limits for HAP, as well as the inaccuracies in EPA's current assumptions, we recommend that the baseline efficiency should be reviewed annually and revised, as necessary.

c. Our Calculation of Alternative Emission Rates Using EPA's Own Basic Methodology Demonstrates How Badly EPA Has Distorted the MACT Floor Results.

In this section we demonstrate how eliminating only the most egregious of EPA's failures in its proposed MACT floor approach results in much more stringent alternative emission rates. We do not offer this analysis to justify EPA's approach; indeed there are many flaws in it, as set forth above, that render the resulting standards illegal. Rather, this approach illustrates that far more stringent emission limits will result if EPA's methods are properly applied: this is true even if one uses EPA's spurious coal-rank based subcategorization scheme,, much of its methodology for identifying the "best"

[94] 69 Fed. Reg. at 4662.

performing sources, a (single) 97.5 percent upper confidence bound, and EPA's method for accounting for variability in coal.

The first step in our analysis was to identify the top-performing plants. As noted above, EPA assumes that variations in the mercury content of the coal account for variability in emissions over time. Thus, to credibly identify the best-performing sources using these data, the coal sampling data for *all* tested plants should be analyzed, *not* just the data from units with the lowest emission rates during the stack test.[95]

We analyzed the coal sampling data from 17 additional plants employing fabric filter ("baghouse") technology for particulate matte control.[96] We chose these plants for further analysis because we found by observing the test results that plants using post-combustion fabric filter technology tended to have better emissions test results. Furthermore, EPA itself recognizes in the preamble to the proposed rule that "[f]abric filters or the combination of spray dryer adsorbers (SDA) and fabric filters were . . . found to be the most effective control technology for mercury removal generally."[97] Adding the additional 17 baghouse plants to EPA's data gave us an enhanced data set containing information on 30 of the 80 total tested plants. The enhanced data set included seven additional lignite-fired units, so that the enhanced data set includes all of

[95] We did not have the resources to apply this methodology to every tested plant, or we would have done so.

[96] Our decision to test plants employing a specific technology does not reflect a preference for a particular technology "as MACT" – rather we were attempting to determine which sources were in fact the best performers. The "best" performance might also result from coal washing or some other precombustion technique – we simply found in observing the test results that plants employing this combination of post-combustion controls tended to have better emissions test results. Whether those results were due to the controls employed or some other factor in play at these plants is unclear, and indeed irrelevant to MACT floor setting.

[97] 69 Fed. Reg. at 4670.

the tested lignite plants. The enhanced data set includes 6 additional bituminous-fired plants and 4 subbituminous plants.

We then used EPA's criteria to estimate the controlled mercury emissions (in lbs./TBtu) for each individual coal shipment to the additional 17 plants, and calculated descriptive emissions rate statistics (annual mean, 97.5th percentile, maximum, standard error of mean, 97.5 percent upper confidence limit of mean) for each unit. These statistics, combined with those for the units EPA evaluated, are shown in Table II-2. To obtain the alternative MACT emission rates, we then arrayed the units from lowest to highest based on the 97.5th upper confidence limit of each unit's mean emission rate. The top 12 percent of the units were identified (shown in italics in the table). Lastly, the 97.5th percent upper confidence limit of the means of the best performing units were averaged to obtain the MACT floor. The final results of our analysis are shown in Table II-3.

Our alternative floor analysis differs from EPA's in several important ways. First, as noted above, EPA arrays the individual "observations" based on coal samples throughout the year and selects the 97.5th percentile value from each plant – that is, the emissions rate representing the emissions rate at each plant which is only expected to be exceeded 2.5 percent of the time – the worst 2.5 percent, in effect. EPA then calculates the standard error of that statistic, as if there were just one observation for each plant – the 97.5th percentile value from each plant. Our approach, by contrast treats each coal shipment as an individual observation, which accounts for the variability between coal shipments. We calculated a mean value (and an upper 97.5th percent confidence limit for the mean) based on the values for all coal shipments for each unit. We reflect EPA's

approach by using the less stringent, upper 97.5 percent upper confidence limit of the mean for each unit, in order to demonstrate that a more lenient approach at this stage of the process (i.e., using the 97.5 percent upper confidence limit of the mean instead of the arithmetic average) *still* results in a significantly more stringent MACT floor than EPA has proposed. Lastly, we calculate the average of the upper 97.5 percent confidence limits of the best performing units, and obtain MACT floors that are considerably lower (more stringent) than the MACT floors calculated by EPA.

We did not adopt EPA's approach of "adjusting" the MACT floors a second time by a multiplicative application of a second 97.5th percentile upper confidence limit to reflect "the fact that the top performing sources in the data base do not represent the full population of the best performing 12 percent of coal-fired utility units." This step is arbitrary and unnecessary, and only serves to artificially inflate the floor emission rates. There is absolutely no statistical basis for assuming that the 97.5th percentile upper confidence limit, rather than the mean, is representative of the full population of the best performing 12 percent of units. Indeed, the Agency has stated in the record that "EPA is confident that the data available are representative of the industry."[98]

Table II-2. Summary Statistics for Selected Tested Units (Top performing units shown in italics.)

Plant	Coal Type	# Coal Samples	Annual Mean (lbs./TBtu)	97.5th percentile	Maxi-mum	SE of Mean	97.5 UCL of Mean lbs./TBtu
Stockton	*Bitum.*	*39*	*0.14*	*0.61*	*0.63*	*0.028*	*0.204*
Dwayne	*Bitum.*	*59*	*0.34*	*1.24*	*1.57*	*0.044*	*0.423*
Valmont	*Bitum.*	*19*	*0.42*	*0.69*	*0.706*	*0.040*	*0.500*
Intermountain	*Bitum.*	*67*	*0.5*	*0.99*	*1.03*	*0.027*	*0.558*
W.H. Sammis	B*itum.*	330	0.59	0.96	1.42	0.010	0.610

[98] Memorandum of William H. Maxwell to Utility Project Files, November 26, 2003. Docket A-92-55, Entry II-B-8; *see also* 69 Fed. Reg. at 4670 (same).

Logan	B*itum.*	33	0.51	1	1.57	0.058	0.645
Mecklenburg	B*itum.*	39	0.47	1.81	3.71	0.116	0.718
Shawnee	B*itum.*	104	1.18	4.04	5.56	0.100	1.406
SEI	B*itum.*	46	1.05	5.69	6.03	0.158	1.415
Clover	B*itum.*	283	1.71	3.56	4.91	0.046	1.817
TNP-One	*Lignite*	*99*	*1.57*	*3.4*	*4.84*	*0.083*	*1.756*
Antelope	*Lignite*	*87*	*4.1*	*7.1*	*7.12*	*0.201*	*4.494*
Stanton 1	*Lignite*	*40*	*4.65*	*6.31*	*6.51*	*0.206*	*5.058*
Heskett	*Lignite*	*36*	*4.87*	*7.8*	*8.8*	*0.261*	*5.279*
Stanton 10	Lignite	40	5.47	8.03	8.32	0.265	6.014
Lewis and Clark	Lignite	28	5.73	7.69	10.3	0.259	6.341
Leland	Lignite	103	6.3	9.5	9.9	0.168	6.724
Coyote	Lignite	27	6.6	11.2	12.8	0.385	7.519
Limestone	Lignite	27	6.66	9.76	16.7	0.575	8.030
Monticello3	Lignite	53	9.18	24.2	24.5	1.008	11.508
Big Brown	Lignite	32	12.3	27.4	40.2	1.413	15.620
Monticello1	Lignite	53	12.5	32.9	33.3	1.370	15.653
Clay Boswell	*Sub-Bit.*	*49*	*1*	*1.99*	*2.06*	*0.063*	*1.131*
AES Hawaii	*Sub-Bit.*	*42*	*1.07*	*2.13*	*2.14*	*0.056*	*1.186*
Craig	*Sub-Bit.*	*82*	*1.38*	*2.65*	*2.64*	*0.061*	*1.482*
Cholla	*Sub-Bit.*	*79*	*2*	*5.58*	*6.23*	*0.141*	*2.287*
Comanche	*Sub-Bit.*	*42*	*2.47*	*4.8*	*4.8*	*0.120*	*2.745*
Rawhide	Sub-Bit.	69	2.42	6.41	6.41	0.161	2.784
Valley	Sub-Bit.	43	3.02	7.39	7.48	0.284	3.683
Sherbourne	Sub-Bit.	118	3.66	7.36	8.08	0.157	4.012
Kline	Waste coal	53	0.09	0.12	0.12	0.002	0.09
Scrubgrass	Waste coal	51	0.1	0.16	0.16	0.004	0.1
Polk	IGCC	24	4.34	7.3	9.2	0.34	5.2
Wabash	IGCC	77	4.14	5.4	13.6	0.22	4.6

Table II-3. Alternative MACT Emission Rates for Existing Sources Compared with EPA Proposal

	EPA's Proposed MACT Emission Floors		Alternative MACT Emission Floors		Percent By Which EPA's Proposed Floors Exceed Alternative Floors
	lbs./TBtu	10^{-6} lbs./MWh*	lbs./TBtu	10^{-6} lbs./MWh**	
Top 4 Bituminous	2.0	21	0.42	4.4	376 %

Units					
Top 4 Subbituminous Units	5.8	61	1.5	16	287 %
Top 5 Lignite Units	9.2	98	4.5	48	104 %
3Top Waste Units	0.38	4.1	0.1	1	280 %
Top IGCC Units	19	200	4.9	39	288 %

* Based on plant efficiency assumption of 32 percent.
** Based on plant efficiency assumptions of 39 percent for conventional units and 42.5 percent for IGCC units.

Again, the alternative emission rates presented in Table II-3. above are presented *only* to illustrate that EPA's approach to calculating the proposed MACT floors is irrational and furthermore results in limits weaker than the statute permits. Table II-3 demonstrates that even using EPA's legally suspect coal-rank-based subcategories, and the Agency's over-generous methodology for accounting for variability in emissions performance, a set of floor emission rates can be developed that are far more health-protective than EPA proposes.

We also have calculated our preferred and recommended MACT floors. Our calculation of recommended floors eliminates two of the other illegal steps in its preferred process, by abandoning EPA's arbitrary reliance on coal rank as the basis for defining subcategories, and by using the mean calculated emissions from annual coal data,[99] rather than the 97.5 percent upper confidence limit of the mean.

We are entirely justified in using the arithmetic mean of each unit, alone, without the 97.5th percent confidence limit, to represent the unit in calculating the MACT floor. The arithmetic mean is (1) consistent with the averaging time proposed for determining compliance (rolling 12-month average) and (2) consistent with the approach endorsed in

[99] EPA should use annual coal shipment data to reflect the fact that it seeks to promulgate an annual emission standard. If compliance is on a 12 month rolling basis as proposed, then the emissions limit should be based on the average emissions expected over the compliance period.

EPA's own Regulatory Policy Manual; moreover it provides the best, unbiased estimate of the average performance of the unit.

Table II-4 summarizes the results of calculating floors without fuel rank based subcategorization and using the arithmetic mean emissions rate of the top performers. The top 12 percent of the top performing units (without regard to coal rank) are identified in the left-hand column of Table II-4. The annual mean emission rate for the top 12 percent of the best performing units is 0.42 lbs./TBtu.

Table II-4. Average of Top 12% Considering Coal Variability (Without Coal Type Subcategories)

Plant Name	Coal Type	# Coal Samples	Annual Mean Emission Rate (lbs./TBtu)
Kline	Waste	53	0.09
Scrubgrass	Waste	51	0.1
Stockton	B	39	0.14
Dwayne	B	59	0.34
Valmont	B	19	0.42
Intermountain	B	67	0.50
W.H. Sammis	B	330	0.59
Logan	B	33	0.51
Mecklenburg	B	39	0.47
Clay Boswell	SB	49	1.01
Average of top 12%			**0.42**

Should EPA decide to subcategorize existing units by process type, distinguishing between conventional combustion units and IGCC units, available information likewise supports a very stringent emissions limit for such units. We agree with EPA that

activated carbon technology is available for IGCC units, but strongly disagree with EPA's assertion that this technology should only be the basis for new IGCC unit MACT and not for existing IGCC unit MACT. Specifically, EPA claims that "because of costs involved and because existing IGCC units utilize older technology," EPA has decided not to pursue an above-the-floor option for existing units.[100] But the agency's approach is at odds with the DOE's findings on mercury controls for IGCC units. In a September 2002 report, DOE concluded that even at that time, mercury controls representing 90 percent removal were available and applicable to then-existing and planned IGCC units.[101]

DOE further stated that the technology for removal of mercury in an IGCC plant was in 2002 already commercially demonstrated to remove greater than 90 percent of the mercury. Furthermore, the DOE analysis was specifically applicable to gasification systems using high-temperature slagging gasifiers and bituminous coal, which includes both of the utility IGCC plants currently operating in the U.S. Consequently, EPA must require MACT mercury emission rates for existing IGCC plants that reflect at least a 90 percent reduction in mercury emissions. Based on our analysis, the mercuryemission rate for existing IGCC units should be 0.49 lbs./TBtu or 3.9×10^{-6} lbs./MWh.[102]

d. EPA Also Has Unlawfully Distorted The New Source MACT Floor Results.

[100] 69 Fed. Reg. at 4677.

[101] Parsons Infrastructure and Technology Group, Inc., The cost of mercury removal in an IGCC plant. Prepared for Department of Energy, National Energy Technology Laboratory (September 2002). Specifically, the study consisted of an engineering analysis of the installation of a fixed activated carbon bed at the (existing) Polk Power Station IGCC plant. DOE not only found that 90 percent reductions were achievable, but also cost effective: the capital costs of 90 percent mercury removal at Polk were $3.34 per kW, representing less than 0.3 percent of the capital for the total IGCC plant. Electricity costs were estimated to increase only $0.254 per MWh, or less than 1 percent.

[102] Output-based standard based on 42.5% efficiency for IGCC plants. Conversion factor for mass/10^{12} Btu to mass/MWh at 42.5% efficiency is 8×10^{-6} TBtu/MWh.

For new sources, the statute requires that the resulting floor emission rates must reflect the emission rate of the best performing similar source. As with its proposal for existing source floors, EPA has inflated the emission rate achieved by the best performer by unlawfully applying multiple variability factors. As shown in Table II-5, we have calculated different, more stringent new source emission rates based on the performance of the best performing source, without using EPA's inappropriate variability adjustment or subcategorizing by coal type. Our recommended emission rate for new sources does not reflect subcategorization by coal type, consistent with our position for existing sources.[103] Table II-5 also reflects the conversion to an output-based standard. For that purpose, we used a 39 percent efficiency for a new coal-fired unit and an efficiency of 42.5 percent for a new IGCC unit.[104]

We also calculated alternative new source emission rates that are consistent with EPA's subcategories and methodology of addressing variability in coal. Again, our only purpose in maintaining the subcategories and coal variability analysis is to illustrate that even EPA's methodology, when applied correctly, results in more stringent limits than the limits EPA has proposed.

Table II-5. New Source Emission Floors: EPA's Proposal Compared with Recommended and Alternative New Source Floors.

	EPA's Proposed New Source MACT Emission Floors (10^{-6} lbs./MWh)*	Recommended New Source Emission Floors (no subcategories by coal type)	Percent by which EPA's Proposed Limits Exceed Recommended Limits	Alternative New Source MACT Emission Limits (10^{-6} lbs./MWh)**	Percent by which EPA's Proposed Limits Exceed Alternative Limits

[103] Moreover, the recommended new source IGCC rate reflects emissions rates achieved with the application of activated carbon technology. EPA also assumes that IGCC units will reduce emissions 90 percent. 69 Fed. Reg. at 4663 (Table 3).
[104] U.S. Energy Information Administration, "Assumptions for the Annual Energy Outlook 2002," DOE/EIA-0554 (2003).

		(10^{-6} lbs./MWh)**			
New Source Bituminous Units	6.0	1.0	500 %	1.7	253 %
New Source Subbituminous Units	20	1.0	1900 %	9.8	104 %
New Source Lignite Unit	62	1.0	6100 %	15	313 %
New Source Coal Waste-Fired Unit	1.1	1.0	10 %	1.0	10 %
New Source IGCC Unit	20	0.39	5028%	0.39	5028%

* Based on assumed new source efficiency of 35 percent for both conventional boilers and IGCC units. 69 Fed. Reg. at 4668.

** Based on assumed new source efficiency of 39 percent for a conventional boiler and 42.5 percent for an IGCC unit.. U.S. Energy Information Administration, "Assumptions for the Annual Energy Outlook 2002," DOE/EIA-0554 (2003).

Table II-5 demonstrates that EPA's chosen route yields emissions floors far higher than faithful implementation of the requirements of the Clean Air Act. If the floors are taken as the standard, that is assuming for argument's sake that there is no achievable beyond the floor level (a position we do not endorse), EPA's proposed MACT rate cannot even be justified as good economic policy. As we demonstrate in Chapter V, far more stringent emission limits are in fact cost-effective.

4. EPA Has Failed to Consider or Improperly Rejected Numerous Tehcnologies that Could Serve as the Basis for Above-the-Floor MACT for Mercury.

EPA's proposal is also legally flawed in its cursory dismissal of the statute's mandate to require a "beyond the floor" analysis of the maximum achievable degree of reductions of HAPs emitted by listed industries.[105] EPA has failed to consider a number of alternatives – of which the Agency is fully aware -- for beyond-the-floor MACT, despite the fact that these alternatives are available and affordable, and despite EPA's clear authority to act so as to spur broader use of existing technology which has not yet been deployed in widespread fashion. More specifically, the statute requires EPA to

consider "measures, processes, methods, systems or techniques, including but not limited to , measures which – (A) reduce the volume of, or eliminate emissions of, [HAPs] through process changes, substitution of materials of other modifications, (B) enclose systems or processes to eliminate emissions, . . . or (D) are design, equipment, work practice, or operational standards . . ." in setting MACT standards.[106] As EPA has elsewhere previously documented repeatedly, there are several approaches to controlling mercury emissions. They include:[107]

- Coal cleaning and fuel switching as a pre-combustion alternatives,
- Installing conventional controls,
- Optimizing the mercury capture of existing control devices,
- Adding mercury-specific controls, and
- Multipollutant approaches (e.g., strategies to simultaneously reduce mercury, NOx, SOx and particulate matter (PM)).

In this instance, however, EPA fails to acknowledge the technology forcing purpose and nature of the MACT provisions, and so fails to adequately consider in this proposal many of the precombustion methods and technological options that currently can be implemented to lower coal-fired utility units' mercury emissions. EPA fails to consider them both in considering the factors driving "best performance" and considering beyond the floor standards. Specifically, the fact that mercury control options and techniques exist and are capable of achieving greater reductions than EPA proposes to require must be evaluated as: (1) the basis for above-the-floor MACT; or alternatively, (2) best demonstrated technology, if EPA persists in its unlawful path of setting standards under § 111.

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[105] *See National Lime Ass'n v. EPA*, 233 F.3d 625, 629 (D.C. Cir. 2000).
[106] 42 U.S.C. § 7412(d)(2).

a. Techniques and Technologies Are Available Now to Further Reduce Utility Unit Mercury Emissions "Beyond the Floor."

As EPA is or should be aware, there are also numerous techniques and technologies currently in use that must be considered in evaluating beyond the floor standards.

(1) Coal Cleaning and Fuel Switching Can Enable Sources to Minimize Their Mercury Emissions Without Add-On Controls.

Coal cleaning – currently used as a method of reducing the sulfur content of some coals – removes about 23 percent of the mercury in the coal and is currently used for about 77 percent of eastern coals.[108] Coal cleaning can thus offer additional mercury reduction for units not already burning cleaned coal. Notwithstanding this benefit, EPA fails to consider even conventional coal cleaning as a potential above-the-floor control option, either for the minority of eastern coal shipments that are not cleaned, or for the majority of other shipments that are not. Given that EPA knows that this process has some mercury pollution benefits, and given that its widespread use today suggests that it is not cost-prohibitive, the agency must evaluate this technique as a potential basis for above-the-floor MACT.

Likewise, in the preamble to the proposed MACT rule, EPA attempts to avoid above-the-floor analysis for mercury-specific coal treatments, arguing that effective pre-combustion Hg removal is not widely feasible at this time, "though some innovative techniques are under development."[109] This characterization of pre-combustion mercury removal should come as an unpleasant surprise to KFx Corporation, which transmitted

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[107] U.S. EPA, Control of mercury emissions from coal-fired electric utility boilers: Interim report including errata dated 3-21-02. Office of Research and Development. EPA-600/R-01-109 (April 2002).
[108] *Id*.
[109] 69 Fed. Reg. at 4674.

information to EPA in August 2003 on its K-Fuel Plus™ process for producing an enhanced subbituminous coal.[110] The KFx pre-combustion process removes 70 percent of the mercury on average, and has other multipollutant benefits.[111] KFx is currently constructing a facility, located at the Wyodak mine, which will be operational by the end of 2004 and will be capable of processing 200 million tons of K-Fuel® per year by 2010. One hundred percent of the capacity of this plant has been pre-sold.[112] According to a Wyodak Mine website,[113] coal mined from this area is used at more than 130 power plants in 27 states. Given that the KFx facility could be capable of processing almost 70 percent of the coal from this area, EPA should clearly consider K-Fuel™ as a commercially available and demonstrated technology for reducing mercury emissions from subbituminous coals.

(2) Conventional Controls can be Added to Existing Units for Mercury Capture.

Conventional NOx and SO_2 controls on existing boilers already capture on average about 36% of the mercury – with some configurations capturing well in excess of this amount. Table II-17 summarizes how well conventional pollution controls can reduce mercury pollution, even without being optimized for mercury capture.[114]

Table II-17. Mercury Capture by Conventional Pollution Controls

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[110] Email from Gail Harrison, Powell Tate to Steve Page, EPA, Subject: KFx State specific mercury and cost data (August 13, 2003).

[111] See http://www.kfx.com (visited June 24, 2004).

[112] www.kfx.com/products/facilities.htm.

[113] http://smtc.uwyo.edu/coal/WyomingCoal/customers.asp.

[114] U.S. EPA, Performance and cost of mercury and multipollutant emission control technology applications on electric utility boilers. Prepared for Office of Research and Development. EPA-600/R-03-110 (October 2003).

Post-Combustion Control Strategy	Control Device Configuration	Average Mercury Capture by Control Configuration (Percent)		
		Bituminous Coal	Subbituminous Coal	Lignite
PM Control Only	ESP(c)	36	9	1
	ESP(h)	14	7	Not applicable
	Fabric filter	90	72	Not applicable
	Particle Scrubber	Not applicable	9	Not applicable
PM Control and Spray Dryer Absorber	SDA + ESP	Not applicable	43	
	SDA + FF	98	25	2
	SDA + FF + SCR	98	Not applicable	Not applicable
PM Control and Wet FGD System	PS + FGD	12	10	Not applicable
	ESP(c) + FGD	81	29	48
	ESP(h) + FGD	46	20	Not applicable
	FF +FGD	98	Not applicable	Not applicable

ESP(c) = cold-side electrostatic precipitator, ESP(h) = hot-side electrostatic precipitator, FGD = flue gas desulfurization, FF = fabric filter, SD = spray dryer, PS = particle scrubber

Thus, even though available information makes it apparent that fabric filters are effective at removing mercury at least from bituminous-fired units, EPA utterly fails to analyze emission rates based on wide deployment of such controls as above-the floor MACT. Likewise, EPA does not consider, as a potential basis for above-the-floor MACT standards, the fact that optimizing the performance of existing control devices for mercury removal (e.g., adding a bag to an existing fabric filter) has the potential to substantially increase mercury capture by these controls. The proposed rule completely ignores these retrofit options, despite a 2001 report by EPA's Office of Research and Development describing a number of retrofit options and stating:

> "Retrofitting or adapting control technologies to the facility's existing air pollution control systems is a potential way to increase the amount of mercury captured by these systems rather than installing new, separate mercury control devices. This strategy offers the advantage of reducing the cost of mercury control

by enhancing the mercury capture efficiency of the air pollution control equipment already in place."[115]

We list these options in Table II-18 for convenience, but refer EPA to its own document for a detailed discussion of these options.

Table II-18. Retrofit Options for Conventional Pollution Control Devices.

➢ Cold-Side ESP Retrofit Options
• Add flue gas cooling. • Add sorbent injection. • Add downstream fabric filter with sorbent injection. • ESP modifications: include converting the last field of the ESP to a wet ESP or a compact pulse-jet fabric filter.
➢ Hot-Side ESP Retrofit Options
• Convert to cold-side ESP with sorbent injection. • Add downstream fabric filter with sorbent injection.
➢ Fabric Filter Retrofit Options
• Add flue gas cooling. • Add sorbent injection. • Fabric filter modifications: potential fabric filter retrofit options include replacing fabric bags with catalytic bags or add electrostatic augmentation to increase the bag cleaning cycle interval time and hence increase sorbent/gas contact time.
➢ Spray Dryer Absorber Retrofit Options
• Use oxidation additives. • Replace existing ESP with fabric filter control device.
➢ Wet FGD Scrubber Retrofit Options
• Use oxidation additives. • Add fixed oxidizing catalysts upstream of scrubber. • Wet FGD scrubber modifications: Modify the scrubber operation and design (as well as the control and design of upstream ESPs). These modifications include the liquid-to-gas ratio, tower design and oxidation air.

(3) Activated Carbon Technology Is Available Now.

[115] Kilgroe, J., et al., Control of Mercury Emissions from Coal-Fired Electric Utility Boilers: Interim Report. U.S. EPA, Office of Research and Development, EPA-600/R-01-109(December 2001).

To achieve significant mercury reductions, activated carbon injection (ACI) will have the widest potential application. In January 2002, Dr. Michael Durham of ADA Environmental Solutions (ADA-ES) testified before the U.S. Senate Committee on Environment and Public Works on results of short-term testing of ACI mercury control technology on full-scale coal-fired power plants.[116] Results showed that more than 90 percent mercury capture was achieved at a power plant burning bituminous coal with a fabric filter for particulate control. Up to 70 percent capture was realized at a subbituminous-fired plant with only an ESP.

Since January 2002, the Department of Energy has sponsored several full-scale demonstrations of ACI technology at the following facilities:[117]

- Alabama Power, Gaston Plant – pulse-jet baghouse (COHPAC); bituminous coal
- WEPCO, Pleasant Prairie – electrostatic precipitator; subbituminous coal
- PGE NEG, Salem Harbor Station – electrostatic precipitator; bituminous coal
- PGE NEG, Brayton Point Station – two electrostatic precipitators in series; bituminous coal.

On March 4, 2003, Dr. Durham presented a summary of these results to the EPA's Utility MACT Work Group.[118]

- Results show that 90+% reduction can be achieved by ACI in combination with a COHPAC fabric filter for both bituminous and subbituminous coal. These results are compared to 65+% removal efficiencies for ACI in combination with ESPs.

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[116] Dr. Michael Durham, ADA Environmental Solutions, Testimony before the U.S. Senate Committee on Environment and Public Works on Status of Sorbent Injection Mercury Control Technology (January 29, 2002).

[117] Durham, M., *et al.*, "Full-Scale Evaluation of Sorbent Injection for Mercury Control on Power Plants Burning Bituminous and Subbituminous Coals", Powergen International 2002, Orlando, FL.

[118] Michael D. Durham, ADA Environmental Solutions, "Results from Four Full-Scale Field Tests of ACI for Control of Mercury Emissions. Presentation to Utility MACT Working Group," March 4, 2003. Available online at: http://www.epa.gov/ttn/atw/combust/utiltox.index.htm

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- ADA-ES concluded that:
  - 90% Hg removal can be achieved for bituminous coals with ACI and fabric filter.
  - 90% Hg removal can be achieved for subbituminous coals with ACI and a fabric filter.
  - 90% Hg removal can be achieved for lignite coals with flue gas cooling, ACI and a fabric filter.

EPA must also, as soon as possible, make public the results of the full-scale, year-long test of ACI at Southern Company's Gaston plant. The test was completed in March 2004. Initial results of 18 consecutive weeks of testing demonstrate an average mercury removal of 85.6%.[119]

It is important to note that the above results are for activated carbon that has not been optimized for mercury removal. Meeting notes in the docket demonstrate that EPA is also fully aware that halogenated activated carbons, which achieve mercury capture in excess of 90% without the use of a fabric filter, will be commercially available in June 2004.[120]

b. EPA's Arguments for Ignoring Mercury-Specific Controls Are Not Supported by the Facts or by the Agency's Prior Practice.

EPA states that mercury-specific control technologies (in particular activated carbon injection) will not be adequately demonstrated until after 2010 and will not be able to be applied to all facilities until 2018. As a result, the agency refuses to evaluate their use as a basis for establishing above-the-floor MACT standards:

> Although AC, chemically impregnated AC, and other sorbents show potential for improving Hg removal by conventional PM and SO2 controls, this

[119] Bustard, J. Full-scale evaluation of mercury control by injecting activated carbon upstream of ESPs and fabric filters. Presented at EUEC '04, Tuscon, Arizona. January 24, 2004.
[120] Memorandum from Bill Maxwell to the Utility MACT Project Files. Subject: meeting with Sid Nelson, Jr., March 10, 2004.

> technology is not currently available on a commercial basis and has not been installed, except on a demonstration basis, on any electric utility unit in the U.S. to date. Further, no long-term (*e.g.,* longer than a few days) data are available to indicate the performance of this technology on all representative coal ranks or on a significant number of different power plant configurations. Therefore, we do not believe these technologies provide a viable basis for going beyond-the-floor.[121]

As discussed below, EPA's rationale is flawed.

First, EPA's position does not agree with the facts. The agency's argument is at odds with information that has been presented by air pollution control equipment vendors and is out of sync with EPA's own analysis of technology availability.[122]There are currently precombustion control options and mercury-specific control technologies that EPA knows or should know are demonstrated and well on the way to commercial availability, if not already in commercial use.

To fully appreciate how much EPA is ignoring the degree to which mercury controls have been demonstrated in practice, and thus must appropriately be considered as the basis for above-the-floor MACT, we have compiled Table II-19. It attempts to summarize, based on publicly-available reports of completed and ongoing mercury demonstration projects (primarily from the Department of Energy's National Energy Technology Laboratory), the results of testing performed to date. A more complete summary of these demonstrations, which for the most part uses verbatim descriptions of the results from reports by the sponsors of the projects, is attached to these comments as Appendix 5.

[121] 69 Fed. Reg. at 4676.
[122] U.S. EPA, 2004. Control of mercury emissions from coal-fired electric utility boilers. Air Pollution Prevention and Control Division, National Risk Management Research Laboratory, Office of Research and Development.

Table II-19. Summary of the Results of Completed and On-Going Mercury Demonstration Projects (primarily from the Department of Energy's National Energy Technology Laboratory.

Control Equipment	Coal Rank	Mercury Removal Results
Sorbent/FF	Bituminous	*Gaston* – Short-term: 87-90% at 1.5 lb/Mmacf; long-term average: 78% *PSCO Cherokee*: 98% (summer) & 99% (winter) removal with fly ash reinjection (LOI 7.6%) *Gaston*: Average mercury removal varied from 70 to 95% at 0.3 lbs/MMacf PAC injection rate during optimization testing. *NETL pilot-scale combustor* (also has SD): Using less reactive sorbent produced in-situ, pilot-scale testing indicates that mercury removal efficiencies of up to 70% are achievable.
Sorbent /ESP	Bituminous	*Abbott*: 73% at 13.8 lb Mmacf *Lausche*: 70% at 3-5 lb/MMacf for B-PAC; 18% at 18 lb/Mmacf for Norit Darco *Brayton Point:* Baseline: 30-90% across 2 ESPs; with Norit Darco activated carbon, mercury capture averaged approx. 25%, 40%, 70%, 75%, and 90% across the second ESP at feed rates of 3, 7, 10, 15, and 20 lb./MMacf. Total average across both ESPs at 10 lb/Mmacf = 94.5% *Salem Harbor:* Baseline approx. 90% (high LOI of 25-30%); with 10 lb/Mmacf injection, average capture efficiency = 94% *Yates*: MerCAP technology; seems to have been some testing in March 2003, which indicates 85-95% total mercury removal.
Sorbent /FF	Sub-bituminous	*Powerton*: Approx. 80% removal achieved in initial screening tests with several sorbents at 1.5 lb/Mmacf (and 72% for iodine-impregnated sorbent at 0.6 lb/Mmacf). In long-term tests, at 2 lb/Mmacf, the 3 better-performing sorbents achieved approx. 90% removal using Teflon bag, and 70-80% using Torcon bag. *PSCO Comanche*: 61% removal with fly ash reinjection (LOI 14.4%) *PSCO Arapahoe*: 62 % (summer) & 82% (winter) removal with fly ash reinjection (LOI 0.4%)
Sorbent /ESP	Sub-bituminous	*Pleasant Prairie* – up to 73% at 11.3 lb/Mmacf *Cliffside*: 30-40% at 5 lb/Mmacf; up to 80% at 6 lb/Mmacf *Powerton*: Using same sorbents as tested above with FF configuration, achieved maximim of 60% removal at 2.5 lb/Mmacf (iodine-impregnated sorbent). *PSCO Arapahoe*: 28% removal with fly ash reinjection (LOI <1 %)
Sorbent/ESP/FF	Lignite	*EERC Combustor*: Achieved 70% removal with 17.1 lb/Mmacf for ESP alone; 7.8 lb/Mmacf for FF alone; and 2.92 lb/Mmacf for ESP+FF
Sorbent/SD/FF	Lignite	*Great RiverStanton*: Untreated activated carbon achieved 40-45% removal at 3 lb/Mmacf, but iodine impregnated carbon achieved greater than 90% at same rate. Iodine impregnated carbon achieved 96% removal in short test at 0.7 lb/Mmacf. With untreated carbon at 6.1 lb/Mmacf, average removal of 81% achieved.
Sorbent/ particulate scrubber	Sub-bituminous	*Laskin Energy Center*: Using untreated activated carbon yielded poor results; carbon treated with iodine had 54% removal at highest concentration tested, 11 lb/Mmacf. With chlorine salt injection, mixed results.
FF	High-chlorine Polish coal	*ALSTOM Power*: In 3 tests, had removal efficiencies of 89.1, 83.1, and 49.2%.
SCR/FGD	Bituminous	*Various Plants:* For three plants with SCR and wet FGD, mercury removal was 84 - 92% (average 89%) with SCR operation and 43 - 51% (average 48%) without SCR operation.
SCR/FF	Bituminous	*DOE/CONSOL et al Site #1*: Average coal-to-stack Hg removal = 87.3% *DOE/CONSOL et al Site #2*: Average coal-to-stack Hg removal = 94.5%
FF with active media	Lignite	*EPA Pilot-Scale Combustor*: ranged between 70-96% removal over a week based on PSA data; measured 97% using O-H data on a single day.
FF with active media	Sub-bituminous	*EPA Pilot-Scale Combustor*: over 90% removal based on PSA data; higher using O-H data
Advanced	Sub-	*Gaston 4*: ElectroCore process captures approximately 90% of the total mercury at

particulate collectors	bituminous	a PAC injection rate of 7 lb/MMacf.. *Big Stone*: Advanced Hybrid Particulate Collector removed 50% to 71% at a carbon-to-mercury mass ratio of 3000:1 and from 65% to 87% at a mass ratio of 6000:1 in small pilot-scale test. Pilot plant test in 11/01 found 91 to 97% total mercury collection efficiency with a sorbent feed rate of 1.5 lb/million acf compared to a baseline (no sorbent) mercury collection efficiency of 49%; believed that co-firing of tire-derived fuel may have increased Cl content and thus removal. In a second pilot plant test, mercury removal was 63% during activated carbon injection at 1.5 lb/MMacf and without any TDF co-firing. A third pilot plant test at lower flue temperatures achieved removal ranging from 65% to over 90% during activated carbon injection at 1.5 lb/MMacf and without any TDF cofiring. Small, pilot-scale testing with high-sulfur fuel & Norit Darco sorbent in 2002 ineffective.
Hg oxidation by catalysts	Bituminous	*First Energy R.E. Burger*: Preliminary O-H method test measurements found average mercury removal of 88% across the pilot plant.
Enhanced FGD	Bituminous	*Endicott*: Total mercury removal averaged 77% (including 95% removal of the inlet oxidized mercury) compared to a baseline removal of approximately 60%. *Zimmer*: no significant effect on total mercury removal which averaged 52% (including 87% removal of the inlet oxidized mercury) compared to a baseline removal of approximately 45%.

As the mercury removal rates presented above indicate, the demonstrations have shown that various technologies are capable of high rates of pollution control for all coal ranks. In particular, it is evident that the use of fabric filters significantly enhances mercury removal in almost all cases. A powerful example of that fact is the testing that has been done at Midwest Generation's Powerton facility, where several sorbents were tested for their ability to reduce mercury emissions in combination with particulate control devices; the testing indicates that the same sorbents, when used together with a fabric filter, reduce mercury levels to a far greater degree than when they are used with electrostatic precipitators. Similarly, the testing summarized above indicates that certain sorbents are more effective than others. EPA must evaluate such evidence in considering what is the "maximum degree of reduction in emissions," achievable from coal-fired units. EPA must evaluate – in view of the costs, the non-air quality impacts, and energy requirements – how much these technologies (alone or in combination) feasibly can reduce emissions, and establish a MACT emission rate accordingly.

Moreover, in response to a request for information posed by Senator Jeffords, five pollution control equipment vendors reported the following regarding availability of mercury control technologies.[123]

- Two companies are confident their technologies can reduce mercury emissions from power plants by at least 80-90% from all ranks of coal burned.
- One of these two technologies can achieve even greater than 90% capture of mercury from the harder-to-control western sub-bituminous and lignite coals.
- Three out of the five companies responding indicate that their technologies are currently available commercially.
- The remaining two plan to enter the market in 2004 and 2005.

EPA is fully aware of this information, and furthermore, according to materials in the docket, EPA has been made fully aware of advancements in technology that will be entering the market in 2004 and 2005. In particular, in a June 4, 2003 meeting with Sorbent Technologies Corporation, EPA was briefed on the development and testing of new sorbent materials.[124] This briefing argued that:

- Sorbent injection has been shown to be very easy and inexpensive to retrofit.
- 70% to 90% reduction in mercury is achievable depending on injection rate.
- New halogenated powdered activated carbons are highly effective and capture both elemental and oxidized mercury.
- Brominated activated carbon (B-PAC®) also performs the best on hot-side ESP units and on low rank coals.[125]

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[123] "The Real Status of Mercury Control Technology." Statement of James M. Jeffords, Ranking Member, Senate Environment and Public Works Committee (December 3, 2003).
Pending EPA Proposal to Deregulate Mercury. December 3, 2003.
[124] Email from Bill Maxwell to Ellen Brown, EPA and Mary Jo Krolewski, EPA. June 16, 2003. Subject: Meeting Wednesday June 4th @ 3:30 in RTP with Sorbent Technologies.
[125] Nelson, S., Jr., R. Landreth, Q. Zhou and J. Miller, 2003. Mercury sorbent injection test results at the Lausche plant. Presented at the DOE-EPA-EPRI-AWMA Power Plant Air Pollution Control "mega" Symposium. May 19-22, 2003. Washington, DC.

- The cost of activated carbon will decline significantly – costs should be near $5,000 per pound removed, not $50,000 as projected by DOE.

- B-PAC® will be commercially available in June 2004 – first commercial production facility is under construction.

- Sorbent Technologies recommends that there be no subcategorization by coal rank.

In addition, activated carbon injection systems are currently being advertised for sale for use at power plants. One company (ADA-ES) states the following on their website about ACI systems:[126]

- Proven technology
- Works for all coals and plant configurations
- Simple, reliable technology
- Cost effective
- Available now

Indeed, ADA-ES currently does have three systems working at power plants, one of which has been in operation for more than a year (Gaston). According to a company official, "the equipment is relatively simple and can be manufactured, delivered and installed in less than 6 months."[127]

EPA's statements concerning the availability of mercury controls simply do not pass the "straight face" test. In summary, numerous types of mercury controls are immediately available. Some of the controls that utility units are likely to employ in order to meet stringent mercury control requirements are summarized in Table II-20 below. EPA's statements otherwise are contrary to the facts. Table II-20 summarizes the state of development of some mercury controls. There are numerous other variations of

[126] *See* http://www.adaes.com.

[127] Durham. M., Performance and costs of mercury control technology for bituminous coals. Presented at Workshop: North Carolina Mercury and CO2 Requirements of the Clean Smokestacks Act, Raleigh, North Carolina, April 19-21, 2004.

these technologies under development (e.g., different activated carbon-based sorbents) that are too numerous to list here.

Table II-20. **Table II-18. Mercury-Specific or Multipollutant Control Technologies[128,129,130]**

Mercury Control Approach	Percent Mercury Capture	Comments
Conventional coal cleaning	23%	Average removal for eastern bituminous coals
Optimization of existing controls	Variable	Incremental increase in performance.
Installation of conventional controls	29%	National reduction achievable through implementation of $PM_{2.5}$ proposed rules.
Activated carbon injection with ESP for PM control.	60%	Addition of a small fabric filter would increase the capture efficiency to 90%. Saving in sorbent costs would payback the cost of the fabric filter in 3 to 4 years.
Activated carbon injection with existing fabric filter for PM control.	90%	For subbituminous and lignite coals, an activated carbon that is treated with iodide or sulfur would probably be needed to achieve this high level of reduction.
COHPAC-TOXECON	90%	This configuration is a small fabric filter in combination with activated carbon injection. High capture efficiency for all coal ranks.
Enhanced wet scrubbing	50 – 80%	Control efficiencies varies with scrubber chemistry. Avoids excess carbon in the fly ash.
K-Fuel™	70%	Advanced coal cleaning techniques for subbituminous and lignite coals.
Powerspan – ECO®	80 – 90%	Multipollutant control. Also removes 98% of SO_2, 90% of NOx, and 99.5% of $PM_{2.5}$.

[128] NESCAUM,. Mercury emissions from coal-fired power plants: the case for regulatory action.
[129] U.S. EPA, 2003. Performance and cost of mercury and multipollutant emission control technology applications on electric utility boilers. Prepared for Office of Research and Development. EPA-600/R-03-110(October 2003).
[130] Environmental Energy Insights. M.J. Bradley and Associates. Volume VII, Issue 1, January/February 2004.

Advanced Hybrid Filter™	>90%	Used in conjunction with activated carbon injection.
Airborne Process	Up to 75%	Multipollutant control. Also removes >95% of SO_2, 60 to 79% of NOx.
LoTox™ Process	> 90%	Multipollutant control. Also removes >90% NOx.
MerCAP™	> 80%	

In view of these developments, EPA's suggestion that mercury removal technology is too speculative to require today is contrary to the facts. Table II-21 summarizes the state of development of some mercury controls. There are numerous other variations of these technologies under development (e.g., different activated carbon-based sorbents) that are too numerous to name here.

Table II-21. Status of Development of Mercury Controls[131,132,133]

Mercury Control Approach	Commercial Status	Projected Availability Date	Comments
Conventional coal cleaning	Available	Currently available	An option for ~ 23% of eastern coals. See K-Fuel® for western coals.
Optimization of existing controls	Available	Currently available	Additional mercury control achievable on existing units.
Installation of conventional controls	Available	Currently available	30% reduction projected to meet other emission limits for $PM_{2.5}$.
Activated carbon injection	Available	Currently available	Systems for power plants now being offered by ADA-ES.[134]
COHPAC-	Available	Currently available	Both components now

[131] NESCAUM, "Mercury emissions from coal-fired power plants: the case for regulatory action," (2003).
[132] U.S. EPA, Performance and cost of mercury and multipollutant emission control technology applications on electric utility boilers. Prepared for Office of Research and Development. EPA-600/R-03-110 (October 2003).
[133] Environmental Energy Insights. M.J. Bradley and Associates. Volume VII, Issue 1, January/February 2004.
[134] See http://www.adaes.com

TOXECON			commercially available. Full-scale tests complete on integrated system. 5-year full-scale test will finish in 2007.
B-PAC®	Near commercial	June 2004	
Enhanced wet scrubbing	Near commercial	2005	
K-Fuel™	Near commercial	Early 2005	
Powerspan – ECO®	Near commercial	3rd qtr 2004	
Advanced Hybrid Filter™	Emerging		Pilot-scale tests
Airborne Process	Emerging		Pilot-scale tests
LoTox™ Process	Under Development		Bench-scale tests
MerCAP™	Under Development		Bench-scale tests
MB Felt Filter	Under Development		Bench-scale tests

c. Mercury Controls are Cost-Effective

Considerations of cost can be considered in above-the floor standard setting.[135] Fortunately, available cost estimates for stringent mercury emission limits demonstrate that significant mercury reductions can be achieved cost-effectively.[136] This fact should come as no surprise to EPA; in 2000, EPA "found that there are cost-effective ways of controlling mercury emissions from power plants. Technologies available today and technologies expected to be available in the near future can eliminate most of the mercury

[135] 42 U.S.C. § 7412(d)(2).
[136] U.S. EPA, Performance and cost of mercury and multipollutant emission control technology applications on electric utility boilers. Prepared for Office of Research and Development. EPA-600/R-03-110 (October 2003).

from utilities at a cost far lower than 1 percent of utility industry revenues."[137] Below are some basic facts about the affordability of mercury control:

- Costs for activated carbon range from 0.003 mill/kWh to 3 mills/kWh.
- Currently 60 percent of bituminous-fired units are currently controlled with an ESP. Activated carbon costs for these units will range from 1.171 – 1.751 mills/kWh for 90 percent control.
- Currently, 70 percent of subbituminous units are currently controlled with an ESP. Activated carbon costs for these units will range from 1.236 –1.903 mills/kWh for 90 percent control.
- EPA expects the cost of activated carbon injection will decrease by at least 40 percent with the development of lower cost sorbents.
- Costs are not available for lignite units. However, emission tests indicate that subbituminous and lignite coals are similar with respect to mercury speciation and control. Therefore, the controls costs for all the low-rank coals are expected to be similar.[138]

As noted above, however, not all plants will need to use activated carbon injection because of advances in other types of technology. Table II-22 summarizes the most recent estimates of mercury control costs. For comparison, NOx and SO_2 control costs are also shown.

Table II-22. Mercury Control Costs[139, 140, 141]

Control	Capital Costs $/kW	Fixed O & M $/kW/year	Variable O & M Mills/kWh

[137] U.S. EPA: "Fact Sheet: EPA to Regulate Mercury and Other Air Toxics Emissions from Coal- and Oil-Fired Power Plants" (December 14, 2000), available online at http://www.epa.gov.ttn/atw/combust/utiltox/hgfs1212.html (visited June 26, 2004).
[138] NESCAUM, Mercury emissions from coal-fired power plants: the case for regulatory action (2003).
[139] *Id.*
[140] U.S. EPA, Performance and cost of mercury and multipollutant emission control technology applications on electric utility boilers. Prepared for Office of Research and Development. EPA-600/R-03-110. (October 2003).
[141] Environmental Energy Insights. M.J. Bradley and Associates. Volume VII, Issue 1, January/February 2004.

SO_2 Control			
Wet scrubber	150 - 200	8.00	1.0
NOx Control			
SCR	50 - 80	0.53	1.37
I. Mercury Controls			
Fabric Filter	40 – 55		0.5
Activated Carbon Injection	< 3	1.00	0.4 (for ACI plus fabric filter); 1.7 (for ACI plus ESP)
COHPAC-TOXECON	55	N/a	2.15 –2.36
Advanced hybrid Filter	35 – 75	N/a	N/a
II. Multipollutant Controls			
Powerspan-ECO™	200	N/a	1.36 – 1.79
Airborne Process	170	N/a	N/a
LoTox™	90 –120	N/a	1.7 – 2.37
K-Fuel®			1.26

N/a means not available.
(1 mill = 1/1000th of a dollar or 0.1 cents. An equivalent measure is $/MWh)

d. EPA's Refusal to Consider Certain Technologies Which Are Not in Widespread Commercial Use Ignores the Agency's Past Interpretation of the Clean Air Act.

EPA argues that some of these techniques are not "commercially available" and dismisses them from consideration -- without analysis -- on this basis alone. But section 112(d)(2) is undeniably technology-forcing in nature: as Senator Durenberger noted on the Senate floor, "[I]ndeed, the Administrator is authorized and *expected* to set the standard beyond the level achieved by any source in the past if he determines that such a standard will be achievable by the deadline for compliance."[142] Moreover, the argument that EPA advances, namely that commercial availability can be considered in such

[142] 136 Cong. Rec. S 16895, 16929 (1990)(emphasis added).

settings, previously has been rejected both by the courts and by EPA in prior rulemakings.

EPA must take a long-term, future-looking view, setting stringent MACT standards based on the performance of the best performers, not on specific technologies already routinely in use on existing sources. By doing so, EPA would force the development of new technologies, respecting the technology forcing nature of section 112 of the Act.[143] . An "achievable standard," furthermore " 'need not necessarily be routinely achieved within the industry prior to its adoption.' "[144] In fact, section 112 was crafted with nearly identical language to section 111, which "looks toward what may fairly be projected for the regulated future, rather than the state of the art at present."[145]

Further, it is not enough for EPA to base its rejection of beyond-the-floor reduction technologies based on a generalized discussion of the technologies' limitations. In *Bluewater Network v. EPA*,[146] the D.C. Circuit found that in determining what is "achievable" by a future compliance deadline under section 213(a)(3) – another "technology-forcing" provision of the Act, with comparable language to section 112(d)(2) – the agency must do more than provide a generalized defense of such a determination, but must provide a "reasonable explanation of the specific anaysis and evidence upon which the Agency relied . . . ."[147]

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[143] *C.f Sierra Club v. Costle*, 657 F.2d 298, 325-26 (D.C. Cir. 1981); *National Asphalt Pavement Ass'n v. Train*, 539 F.2d 775, 785-86 (D.C. Cir. 1976) (discussing technology forcing in the context of section 111 standard setting).
[144] *Id.* at 786 (quoting *Essex Chem. Corp. v. Ruckelshaus*, 486 F.2d 427, 433-34 (D.C. Cir. 1973), *cert. denied sub nom. Appalachian Power Co. v. EPA*, 416 U.S. 969 (1974)).
[145] *Lignite Energy Council v. EPA*, 198 F.3d 930, 934 (D.C. Cir. 1999)(quoting *Portland Cement Ass'n v. Ruckelshaus*, 486 U.S. 427, 433-34 (D.C. Cir. 1973), *cert. denied sub nom. Appalachian Power Co. v. EPA*, 416 U.S. 969 (1974)).
[146] 2004 U.S. App. LEXIS 10632 (D.C. Cir. 2004).
[147] *Id.* at *50.

In setting the "greatest degree of emission reduction achievable" standards for snowmobiles at issue in *Bluewater Network,* EPA determined that there were no purely technological obstacles to a standard tha required advanced technologies,[148] but that "standards reflecting across-the-fleet implementation are not 'achievable' by 2012 . . . ."[149] the court found that this conclusion was arbitrary and capricious because EPA had set the standard only as stringently as could be met by 70 percent of existing models on the basis of cost, without an examination of the prohibitive costs to the 30 percent of medels for which the advanced technologies were inapplicable.[150] More importantly, the agency could not simply base its standards upon general limiting factors that would inhibit greater reductions by 2012.[151] The court found that because the agency had made its determination "not on technological obstacles *per se*, but rather on the cost and time required to 'optimize' advanced technology for each showmobile model on the market[,]" EPA was required to estimate the time and cost needed to implement a stronger standard and the scope of implementation that is actually feasible by compliance time.[152] "We can defer to the Agency's prediction of the feasible pace of implementation only if it has adequately explained the basis of that prediction."[153]

Likewise, in the current rulemaking, EPA has failed to provide a reasonable explanation for its rejection of beyond-the-floor technologies. EPA's rejection of advanced technologies seems mostly grounded upon the Agency's belief that they are not currently available on a commercial basis, and doubts about the technologies'

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[148] *Id*.
[149] *Id*. at *46.
[150] *Id.*
[151] *Id.*
[152] *Id.* at *50.
[153] *Id.*

performance on all representative coal ranks, or on a significant number of different power plant configurations. As in *Bluewater Network,* EPA's rejection of a standard requiring greater emission reductions seems primarily based on determination that a standard could not be met across the industry. This conclusion, based on cost and time considerations, is unsupported by the record. For example, EPA completely fails to explain what it means when it says a control technology is not "commercially available." Further, EPA fails in this rulemaking to provide any analysis that shows that the barriers to implementation of advanced technologies today will still exist after the three year period between the final rule and the statutory compliance date.[154] It is not enough for the Agency to simply provide the generalized discussion of control technologies' limitations, and simply to say that greater emission reductions are not achievable. As in *Bluewater Network,* EPA must provide an analysis of what would be required of industry to meet a more stringent standard and an analysis of the scope of implementation of such a standard within compliance time. EPA's failure to provide the analyses makes its MACT proposal unreasonable and arbitrary and capricious.

The agency also has rejected considerations of the commercial availability of specific technologies in MACT floor determination in previous final rules. For example, in 1995, when EPA issued final federal emission guidelines for large existing waste municipal incinerators (MWCs) and NSPS for new MWCs under Section 111 and under

[154] In a similar vein, the Agency also fails to explain why municipal waste combustors were expected to achieve significant mercury emission reductions using activated carbon injection when the Agency set MACT and NSPS standards for that industry in the 1990s, but why the electric utility industry is ow not expected to utilize the same control technology as easily. A lack of data from electric utilities is no excuse, either. As the D.C. Circuit has long recognized, "[w]here data are unavailable for EPA to determine that a standard is "achievable," EPA may compensate through the use of other qualitative methods, including the reasonable extrapolation of a technology's performance in other industries." *Lignite Energy Council*, 198 F.3d at 934 (quoting *Portland Cement Ass'n v Ruckelshaus*, 486 F.2d 375, 391 (D.C. Cir. 1973) (internal citation omitted).

Section 129 of the Clean Air Act,[155] EPA rejected a number of commenters' complaints that the control technology necessary to MWCs to meet the proposed MACT standard was neither commercially nor technologically available. Several commenters had asserted that the lack of demonstrated data on carbon injection (interestingly, the same technology EPA now says is commercially unavailable for electric utilities) was "based on a small number of short-term tests using temporary control equipment at only two facilities" and was not indicative of what was achievable for long-term, permanent installations.[156] Another commenter argued that the two tests used by the EPA as the basis of the mercury standard lacked "sufficient repetitions of both control and test runs to provide good statistical reliability to the numerical conclusions."[157] Commenters argued that "commercial application of technology often isolates problems not observed during short-term test runs."[158]

EPA rejected these arguments on legal grounds, stating that while no MWCs had in place the control technology configuration that would be required to meet the final MACT standards, EPA was fully justified in setting the floor at the more stringent levels it did because of the technology-forcing purposes of sections 111 and 129 of the Clean Air Act.[159] Moreover, EPA disagreed with commenters' arguments that the statute

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[155] 60 Fed Reg. 65,387 (Dec. 19. 1995); 62 Fed Reg. 45,116 (Aug. 25, 1997).
[156] EPA, Municipal Waste Combustion: Background Information for Promulgated Standards and Guidelines - Summary of Public Comments and Responses (Subparts Eb and Cb) (EPA-453/R-95-0136), at 3-43, located at http://www.epa.gov/ttn/atw/129/mwc/mwcbid95.pdf.
[157] *Id*.
[158] *Id*.
[159] *Id*. at 3-29. Section 129 of the Act requires a MACT approach to floor setting – the language of section 129 tracks that of section 112(d) very closely.

requires a demonstration that MACT levels would be achieved continuously, or by all units industry-wide:[160]

> . . . the [current] standards [are] permissible, because an achievable standard does not have to be one that already is routinely achieved in industry; the standard only must be "within the realm of the adequately demonstrated system's efficiency . . .." Essex Chemical Corp. v. Ruckelshaus, 480 F.2d 427, 433-34 (D.C.C. 1973). See also Chemical Manufacturers Ass'n v. EPA, 885 F.2d 253, 264 (5th Cir. 1989) (while upholding technology-based water standards determined on a pollutant-by-pollutant basis, the court stated that "the fact that no plant has been shown to be able to meet all of the limitations does not demonstrate that all the limitations are not achievable").[161]

EPA furthermore noted the advancement of the technology even during in the time period between the rulemaking proposal and the issuance of the final rule. During that period, 12 MWC units located at 5 MWC plants had initiated operation of control configurations that included the use of carbon injection systems, and all of the units at all of the plants were in compliance with the proposed MACT levels.[162]

e. EPA Has Utterly Failed to Adequately Consider Sources' Ability to Achieve Above-the-Floor Levels of Pollution Reductions.

To recap, section 112(d)(2) states explicitly that emissions standards promulgated by the Agency "shall require the maximum degree of reduction in emissions of the hazardous air pollutants subject to this section (including a prohibition on such emissions where achievable). . . ." EPA cannot plausibly read this language to allow it to ignore the options noted above for optimizing the performance of currently installed control devices, the addition of conventional control devices – not just selective catalytic reduction, but fabric filters and scrubbers. Clearly, the EPA must consider ACI as a

[160] *Id*. at 7-71.
[161] *Id*. at 3-113..

viable option, particularly with long-term tests from the Gaston plant now available. Also, EPA must at the very least respond to information submitted to the record by KFx Corporation andSorbent Technologies Corporation that clearly indicates the availability of new and effective technologies and control techniques that can yield significant emissions reductions. Similarly, EPA must consider the fact that ACI is currently being advertised and marketed for application on utility units, and it must give greater credence to the results of the numerous demonstration projects conducted to date, which on the whole reveal that EPA can demand significant cuts from current mercury emissions and companies can meet stringent limits using various technologies.

5. State Regulatory Efforts Demonstrate that Stringent MACT Standards for Mercury are Achievable.

Several states recently have taken steps to clean up power plant air emissions, including mercury in their own jurisdictions. Two states, Connecticut and Massachusetts have finalized legislation including stringent mercury control requirements; Massachusetts also recently promulgated implementing state regulations which are significantly more stringent than EPA's proposal. Wisconsin and New Jersey has proposed regulations, which are undergoing final review; the Wisconsin Natural Resources Board approved a set of mercury regulations on June 23, 2004, which are now awaiting final approval by the state legislature. The contrast between the stringency of the proposed and final state standards and other specific requirements of the regulatory efforts in these states and the elements of EPA's proposal is striking. As summarized in

[162] *Id.* at 3-45.

Table II-23 below, the states are requiring (or proposing to require) deeper reductions in mercury emissions over a shorter period of time than EPA.

Table II-23. Final and Proposed State Mercury Regulation for Power Plants

	MASSACHUSETTS[163] (final)	**CONNECTICUT**[164] (final)	**WISCONSIN** (preliminary approval)	**NEW JERSEY**[165] (proposed)
Stringency of Standard	Cap emissions at 1997-1999 levels Phase I – 85% control efficiency or 0.0075 lbs/GWH. Phase II – 95% control efficiency or 0.0025 lb/GWH. [equivalent to ~ 0.2 lbs./TBtu]	No caps. 0.6 lbs./TBtu or 90% control efficiency.	Cap on emissions: current control efficiency multiplied by baseline (3 yr. mercury coal aver.) Phase I – 40% reduction from coal. Phase II – 75% reduction from coal. (note: the rules include a "goal" of 80 %t reduction by 2018)	No caps. 3.00 mg/MW-hr or 90% control efficiency. [equivalent to CT level: 0.6 lbs./TBtu]
Format of Standard	Either output-based emissions rate or percent reduction from inlet levels.	Either heat input-based emission rate or percent reduction from inlet levels.	Percent reduction from coal.	Either output-based emissions rate or percent reduction from inlet levels.
Compliance Deadline	Phase I –January 1, 2008 Phase II – October 1, 2012 [To coincide with SO2 requirements]	July 2008.	Phase I – 2010 Phase II – 2015	December 2007 [see below for alternate compliance date]
Other	Facilities that will terminate operation by January 1, 2010 can stack test instead of	Alternative limit can be developed if technology proven infeasible. Stricter	Phase 1 waived if multi-pollutant approach taken. Variances for	5 year extension granted IF the following are

[163] 310 C.M.R. 7.29 (June 4, 2004).
[164] Connecticut Pub. Act 03-72 (June 3, 2003).
[165] 36 N.J.R. 123(a) (Jan. 5, 2004).

	CEM and offset (in same DEP region) 1:1 air emissions and 10:1 other Hg reductions. Facilities emitting less than 5 lbs./year can meet cap by offsetting air emissions 1:1 (in same DEP region) and 10:1 other emissions (within same DEP region) until 9/30/2012.	standard may also be issued.	reliability, technical or economic infeasibility included. Trading among 4 utilities allowed.	met by 2007: 50% of MW capacity meets standard; enforceable agreement signed to install control equip; stringent SO2, NOx, and PM limits are met. Rule does not apply to plants that have entered into enforceable agreement to shut down plant by Dec. 2012.

New Hampshire and North Carolina also have passed multi-pollutant legislation that also addresses mercury. Each of these states will assess the mercury co-benefits of reducing SO_2 and NOx emissions and then recommend mercury emission limits to their state legislatures. In New Hampshire, a mercury cap will be recommended to the legislature in 2004, while a September 2005 deadline is in place for North Carolina. Delaware, Maryland, Illinois and Michigan are also actively pursuing state legislative solutions to control mercury from the coal-fired power plants in their states. EPA's foot-dragging on meaningful mercury regulations for power plants has resulted, and will continue to result in development of state-specific rules.

These states have determined for themselves, based on currently available science and technical evidence, that far more stringent mercury regulations are justified and

feasible in the near term. This demonstrates that, by contrast, EPA's go-slow and do-little approach is hardly representative of the "maximum degree of emissions reductions" achievable from this industrial sector. For example, EPA's preferred regulatory alternative establishes a cap *aimed at* reducing mercury emissions by nearly 70 percent in 2018(and is predicted only to achieve a 48 percent cut by that time), whereas Massachusetts's coal fired power plants will have been reducing their mercury emissions by more than 85 percent for 10 years by then!

In addition to legislation, states are also addressing mercury emissions from coal-fired power plants through the case-by-case MACT permit process for new plants. The states are concluding that significant mercury controls are technically feasible and available in the very near term, and therefore are requiring emission rates far lower than EPA has proposed. EPA, however has completely ignored these regulatory and permitting efforts, despite the fact that D.C. Circuit has stated that relevant permit levels can be used in floor setting if it can be shown that they reasonably estimate the performance of the top units. *Sierra Club v. EPA*, 167 F.3d 658, 663 (D.C. Cir. 1999).

Two recent permits are very noteworthy. In Council Bluffs, Iowa, the new 790 MW MidAmerica Energy Center facility is scheduled to commence operation in 2007.[166] The permit for this plant, which will burn subbituminous coal, requires the plant to reduce mercury emissions by 83 percent (measured against the input mercury level in the combusted coal), which will be met by using activated carbon injection. This is equivalent to an emission rate of 1.7 lbs./TBtu – an emission rate about 70 percent more stringent than EPA's proposed emission rate of 5.8 lbs./TBtu for units burning

subbituminous coal. Second, a permit has been issued in Wisconsin for the Elm Road Generating Station, which will fire washed Pennsylvania bituminous coal.[167] The permitted emission rate for this plant is 1.12 lbs./TBtu, based on 90 percent removal of mercury from the coal being burned. This is far lower – indeed, about twice as stringent as – EPA's proposed rate of 2.0 lbs./TBtu for units burning bituminous coal.

C. EPA's Failure Even to Consider Regulating HAPs Other than Mercury in its MACT-Setting Process is Contrary to Law.

EPA cannot – as it argues it must – pick and choose those HAPs for which it will establish MACT standards, and the agency's invocation of section 112(n) as authorizing this approach[168] does not legally justify its action. The agency's December 2000 regulatory determination and decision to list *the source category* utility units under section 112(c) triggered the duty to regulate major sources in that category under section 112(d), which the D.C. Circuit Court of Appeals has declared includes a "clear statutory obligation to set emissions standards for each . . . HAP [listed in CAA §112(b)]." *National Lime Ass'n v. EPA*, 233 F.3d 625, 634 (D.C. Cir. 2000). Once EPA decides to list a source category, therefore, the Agency is not faced with any additional "decision" about whether to issue MACT standards, nor is it given a choice about which pollutants it

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[166] Iowa Department of Natural Resources, Air Quality PSD Construction Permit for CBEC 4 boiler, three Carbon Silos and Fugitive Emissions Notice of MACT Approval, MidAmerican Energy Company, Permit No. 03-A-425-P (June 17, 2003).

[167] Air Pollution Control Construction Permit, Elm Road Generating Station, Oak Creek, Wisconsin, Permit No. 03-RV-166 (January 14, 2004). Available online at http://dnr.wi.gov/org/aw/air/permits/APM_toc.htm.

[168] *See* 69 Fed. Reg. at 4660.

must regulate.[169] EPA, however, claims that its regulatory determination was "over-broad" insofar as it applied to HAPs other than mercury and nickel, and proposes not to establish emission standards for those other pollutants. Specifically, EPA says that the "record supports only a finding that emissions of Hg and Ni warrant regulation. Nothing in the Study or the information EPA following that study even arguably supports the proposition that EPA should address HAP emissions fro utility units other than emissions of Hg and Ni."[170]

EPA's approach rests on a legal theory that the CAA "only authoriz[es] regulation of utility units under section 112 with respect to HAP emissions from such units that EPA has determined are 'appropriate and necessary' because they are reasonably anticipated to result in a hazard to public health even after imposition of the other requirements of the CAA."[171] This theory echoes one put forward by Latham & Watkins on behalf of certain utility interests, which argued that the December 2000 Regulatory Finding constituted a decision about which pollutants would be regulated in the subsequent MACT rulemaking proceeding and that, for coal-fired units, EPA decided only to regulate mercury emissions. But EPA's regulatory determination was not, and indeed could not possibly have been, a decision about which HAPs would be regulated, except to the extent that it legally committed the agency to develop standards for all listed HAPs that utility units emit. First, the plain language of the determination was much broader than mercury; EPA concluded that "regulation of *HAP emissions* from coal- and oil-fired electric utility

169 Environmental Coalition, Utility MACT Working Group, EPA'S Duty to Regulate All Non-Mercury Hazardous Air Pollutants Emitted by Coal- and Oil-Fired Electric Generating Units (March 3, 2003). A-92-55 Item II-E-119.

[170] 69 Fed. Reg. at 4683.
[171] 69 Fed. Reg. at 4660.

steam generating units under section 112 is 'appropriate and necessary.'"[172] Second, with that finding made, section 112(n) mandates that EPA must regulate the EGU source category "under this section" – namely section 112. The statute is clear that the finding and listing decision concern the *source category*, not the *pollutants* to be regulated.[173] EPA's Regulatory Finding and listing decision reflect this.[174] Third, having made the finding and listing, EPA has stated that regulation under section 112(d) is required as a "rather obvious" consequence of "the language and structure of section 112 itself."[175] Consequently, EPA's 2000 determination represented a conclusion that MACT standards, with all of their attendant requirements, should be established for utility units.

In *National Lime Ass'n v. EPA*,[176] the court ruled that section 112(d) standards must include each listed HAP emitted by the regulated category. During the development of the MACT standards for the portland cement manufacturing plant source category, EPA found that such facilities emit significant levels of several categories of HAPs listed in CAA section 112(b).[177] In the final MACT rule, however, EPA set no standards ("floors of no control") for three of the HAPs emitted by the source category, because it "found no cement plants using control technologies for these pollutants."[178] Sierra Club argued, and the Court agreed, that the result – EPA's failure to set emission limits for three HAPs listed in CAA section 112(b) and emitted by the major sources in the listed

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[172] 65 Fed. Reg. at 79,830 (emphasis added); *see also* U.S. EPA, "Fact Sheet: EPA to Regulate Mercury and Other Air Toxics Emissions From Coal- And Oil-Fired Power Plants" (Dec. 14, 2000) ("To reduce the risk mercury poses to people's health, the Environmental Protection Agency . . . is announcing that it will regulate emissions of mercury *and other air toxics* from coal- and oil-fired electric utility steam generating units" (emphasis added)).

[173] *See* CAA §§ 112(n)(1), 112(c).

[174] 65 Fed. Reg. at 79,830 ("[t]herefore, the EPA is adding coal- and oil-fired electric utility steam generating units to the list of source categories under §112(c) of the CAA").

[175] Reply Br. of EPA in Support of Motion to Dismiss, *Utility Air Regulatory Grop v. EPA*, No 01-1074 & consol. case, at 4 (D.C. Cir., May 17, 2001).

[176] 233 F.3d 625 (D.C. Cir. 2000).

source category – violated CAA section 112(d)'s requirement that the Administrator must establish emission limits for each of the HAPs listed in CAA section 112(b).[179]

Latham & Watkins offers several arguments by which utility units can avoid this clear statutory requirement to address all emitted HAPs, but none of them bears scrutiny. First, the *National Lime* Court did *not* interpret a "different subsection of 112" than is pertinent and dispositive here. In *National Lime*, the court interpreted CAA section 112(d) as imposing a mandatory duty to regulate all HAPs emitted by a listed source category and, as EPA has admitted, utility units must be regulated under section 112(d) following the agency's listing decision. Second, the sparse legislative history upon which Latham & Watkins (and EPA) relies – consisting of floor statements of Representative Michael Oxley – does not contradict this view. Nor does it support the notion that Congress intended any different result for utility units than for any other source category listed under section 112(c) – that is the development of MACT regulation for all emitted HAPs. Rather, Rep. Oxley's statements simply describe the process leading up to the listing decision for utility units. Rep. Oxley argues that the conferees accepted the provisions of the bill that became section 112(n) "because of the logic of basing any *decision to regulate* on the results of scientific study . . ."[180] But of course EPA made the "decision to regulate," referred to by Rep. Oxley, in its science-based decision in 2000 that it is "appropriate and necessary" to regulate utility units.

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[177] *Id.* at 629-30.
[178] *Id*. at 630, 633.
[179] *Id*. at 633 ("the statute lists over one hundred specific HAPs, 42 U.S.C. § 7412(b)(1), and requires EPA to 'promulgate regulations establishing emissions standards for each category or subcategory of major sources . . . of [HAPs] listed for regulation.*'"(quoting* 42 U.S.C. § 7412(d)(1))).
[180] 136 Cong. Rec. E3670, E3671 (emphasis added).

Similarly, EPA quotes Rep. Oxley as saying that the EPA Administrator may "regulate only those units that he determines . . . have been demonstrated to cause a significant threat of serious adverse effects on the public health."[181] The utility industry construes this comment to mean that "the regulation of *any HAP emissions* from power plants that do not satisfy this criteria . . . would be ultra vires,"[182] but this statement says nothing about picking and choosing which particular pollutants to regulate. Instead, Rep. Oxley's focus on those units that are "appropriate and necessary" to regulate is completely consistent with the December 2000 determination and listing of coal- and oil-fired utility units, which was based on a great deal of scientific evidence[183] that major EGU source emissions indeed present a significant threat of serious adverse effects on the public health.

Even if Rep. Oxley's comments could be construed as the utility industry would prefer, they are still nothing more than the comments of one conferee.[184] Moreover, these comments are further discredited by the fact that they are at odds with the language of section 112(n), which requires EPA to regulate utility units under section 112 of the Act."[185] Section 112(n) does not require EPA to regulate only those units that EPA determines to present a threat to public health.

Utility interests assert that Congress did not intend for utility units to be regulated "independently" of the § 112(n) study. We concur with this view – but do not agree that the section 112(n) study (or any of the studies supporting the section 112(n) finding and

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[181] *Id.*
[182] Latham & Watkins, L&W Non-Mercury HAPs Memo at 4.
[183] Indeed, far more than Congress required in 1990, see CAA § 112(n), 42 U.S.C. § 7412(n).
[184] *See, e.g., National Small Shipments Traffic Conf., Inc. v. Civil Aeronautics Bd.*, 618 F.2d 819, 828 (D.C. Cir. 1980) (noting that statutory language should control over inserted statements in the legislative history).

listing decision) limited which pollutants will be regulated. Congress established a framework, as described above, in which the section 112(n) study is to be "considered" by the Agency in making the finding that it is appropriate and necessary to regulate utility units.[186]

EPA now has proposed a rule that utterly fails to regulate all of the recognized HAPs (aside from mercury and nickel) known to be emitted by utility units. Under the plain language of the Act, as authoritatively interpreted by the U.S. Court of Appeals for the D.C. Circuit, the agency's actions are simply unlawful.

1. The Record Supports the Development of MACT Floors for Non-Mercury HAPs Emitted by Utility Units.

As described in Chapter 1, the electric utility industry is one of the largest industrial emitters of listed toxic chemicals other than mercury. The health effects of these chemicals are well-documented, as shown in Table I-1. Some are known to cause cancer, others impair reproduction and the normal development of children, and still others damage the nervous and immune systems. Many are respiratory irritants that can worsen already existing respiratory conditions such as asthma. Some of these pollutants are of environmental concern because they damage ecosystems and can harm the plants and animals that rely on these ecosystems.

EPA cannot hide behind a supposed lack of data about the emissions of these chemicals from the electric utility sector, and use that alleged lack of data to avoid MACT standard-setting for these chemicals. First, it is clear that EPA has authority, spelled out in section 114(a) of the Clean Air Act, to collect information necessary for the

[185] *Cf. Brock v. Pierce County*, 476 U.S. 253, 263 (1986)(controlling effect should not be given to individual legislators' statements; although they may be helpful if they are consistent with the statutory language).

purposes of any standard setting under section 112(d) of the Act. The environmental community has urged the Agency repeatedly since 2000 to augment its data set if the Agency had reason to believe it was lacking.

Second, the stack test data set collected during the development of the Utility HAP report is by itself sufficient to support a floor for 'non-mercury HAP metals' emitted by coal fired units. The Agency must use these data to set emission standards for all of the non-mercury HAP metals. The currently available emissions data for other non-mercury HAPs do not appear to be sufficient to develop a MACT floor. Consequently, we again recommend (as our stakeholder community did in 2001 in the Utility Working Group process) that the agency collect sufficient data on the other non-mercury HAPs to enable the agency to develop emission rates for all of the other non-mercury HAPs as required by the CAA.[187]

A floor for the non-mercury HAP metals emitted by existing coal-fired units must be based on the average of the best performing 12 percent of the 30 power plants tested. Based on these data we recommend a MACT floor (in the form of an output-based emission rate) that would reflect a 99 percent removal for all metals. Table II-24 below lists the input-based emission rates that represent the average of the best performing 12 percent for the tested units; as discussed above, we recommend that EPA develop output-based standards, but do so consistent with the MACT approach.

Table II-24. Recommended Floor Emissions Rates for Non-Mercury HAPs emitted by the Electric Utility Industry.

Metal	Emission Rate (lbs./Trillion Btu)

[186] 42 U.S.C. § 7412(n)(1)(A).
[187] Letter to Sally Shaver, U.S. EPA and John Paul, Co-chairs of Utility MACT Working Group, from environmental group representatives on Utility MACT Working Group (December 17, 2001).

Antimony	0.15
Arsenic	0.24
Barium	1.34
Beryllium	0.01
Cadmium	0.16
Chromium	0.91
Cobalt	0.19
Copper	1.3
Lead Compounds	0.34
Manganese	2.38
Molybdenum	0.61
Nickel	1.34
Selenium	0.19
Vanadium	0.58

D. Granting a Global Compliance Extension is Beyond EPA's Authority Under the Act.

EPA requests comments on whether a one-year extension should be granted to all existing facilities required to comply with the MACT control requirements.[188] EPA simply is not authorized by the statute even to offer such a blanket extension. Section 112(i) defines the compliance schedule for new and existing sources; section 112(i)(3) provides EPA authority to establish compliance as expeditiously as practicable but not

[188] 69 Fed. Reg. 4682.

later than three years after promulgation -- with very limited exception. Up to one additional year may be permitted for an existing source to comply with the standard, if such additional period is "necessary for the installation of controls."[189] But the one-year extension provision obviously contemplates a source-specific exception -- issued by the permitting authority .[190] EPA is not authorized by the statute to use this provision to extend compliance for all sources in a source category.[191]

Congress explicitly required the three-year compliance period in its 1990 amendments as part of its attempts to reign in EPA in its prior failures to regulate sources of hazardous air pollutants.[192] The goal of the 1990 Amendments to section 112 was to set a course for the rapid development and deployment of technology based standards for all sources categories that emitted HAPS – including electric generating units.[193] Congress's urgency for prompt compliance and its intent to encourage compliance as soon as possible was evident not only by this provision but by other incentives for early compliance that Congress enacted in 1990.[194]

[189] 42 U.S.C. § 7412(i)(3)(B).
[190] See the regulations implementing this section at 40 C.F.R. Section 63.6(i)(4)(B).
[191] Although we realize that EPA has granted a one-year extension to all source categories in other MACT rulemakings pursuant to Section 112(i), we contend that it was and is an inappropriate use of this authority.
[192] *See* S. Comm. Rep. No. 101-228, at 132 (Report on S. 1630, Clean Air Amendments of 1989).
[193] There is nothing unique about electric generating units as far as the Section 112(i) compliance deadline is concerned. Furthermore, section 112(i) applies to all emission standards established under Section 112 of the Clean Air Act, which obviously includes any established pursuant to section 112(n), *if* one were to assume, *arguendo,* that it is an accurate to assert that the authority to 'establish regulations' is granted to EPA by section112(n) of the Act.
[194] For example, Congress adopted an early compliance extension program to encourage sources to make reductions well in advance of when otherwise required. In exchange for substantial early reduction of HAPs, a facility can gain an additional six years to achieve compliance with the actual MACT standard. *See* Section 112(i)(5) and implementing regulations at 40 C.F.R. § 63.70, *et seq.*

1. Even if EPA had the legal authority to grant a blanket compliance extension, which it does *not*, the reasons set forth by industry and EPA simply do not provide a rational basis for such an extension.

Utility representatives argue that standards containing similar compliance dates for a large number of sources would result in numerous facilities competing for a limited number of experienced contractors in order to meet the standards at the same time. They suggest a staggered compliance schedule for the sources affected by the standards. They also state that many sources would require more than 3 years to install the required control equipment given the limited number of contractors experienced in installing control equipment and the lead time needed to meet permitting requirements. Industry asserts, for these reasons, that it is a practical impossibility to comply within the three-year period of time.[195]

EPA furthermore solicits comments on whether a 1-year extension should be granted for facilities required to install controls in order to comply with the proposed CAA section 112 MACT rule.[196] EPA states in the proposal that it believes a substantial number of sources would have to install control technologies to meet the limits of the proposed standard. EPA states that "such construction could be constrained by the potential impacts on electricity reliability, delays in obtaining permits and other factors (including potential labor and equipment shortages).[197] EPA identified as one of the most limiting factors in regards to the implementation of the emissions program a shortage of boilermaker labor. Predominately employed in the power industry, boilermakers are

[195] *See* L&W Global Compliance Memo.
[196] 69 Fed. Reg. at 4682.
[197] *Id.*

skilled laborers that perform welding, rigging and hoisting for the construction and maintenance of boilers and high pressure vessels.

The Institute of Clean Air Companies (ICAC), a nonprofit, national association of companies that supply air pollution control and monitoring technology for all types of stationary sources, including coal-fired power plants, performed a thorough evaluation of the availability of resources necessary for compliance with this rulemaking.[198] This evaluation included examination of the constraining assumptions EPA makes concerning the availability of boilermaker labor, usage of time to construct equipment, installation of equipment, the types of construction methods implemented, etc. The ICAC concluded that the air pollution control industry in fact is prepared, now, to install significant amounts of air pollution controls within a short period of time. In short, there are readily available equipment and labor resources to achieve regulatory timeframes far quicket than those envisioned by EPA.[199] ICAC points to great success in achieving controls with the NOx SIP call. In addition, ICAC points to impressive compliance timeframes achieved by the coal-fired power plants of both Germany and Japan.[200] In fact, given the wide-spread availability of control technologies and services combined with vendor and industry experience, EPA should have far greater optimism in what can and should be achievable by these rules than is reflected in the preamble.

Moreover, EPA's concerns about potential labor and equipment shortages also have been addressed in detail in comments submitted by the Clean Air Task Force,

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[198] *See* Testimony of David Foerter, before EPA Hearing on Utility MACT rulemaking (February 26, 2004), available online at http://www.icac.com/iaqrepacmt22604.pdf (visited June 24, 2004).

[199] *Id.*
[200] *Id.*

NRDC, and others on EPA's proposed Interstate Air Quality Rule.[201] In response to EPA's request for comments on this issue in the Utility MACT proposal, we incorporate these comments by reference.

The ICAC also submitted written comments on EPA's IAQR.[202] These comments analyzed the adequacy of boilermaker labor needed to install the control equipment projected by EPA to be necessary to implement the SO_2 and NOx reductions required by the IAQR. Based on a very conservative analysis of the projected demand and supply of boilermaker labor, ICAC concluded "there will be enough boilermaker labor to implement the 2015 targets of the IAQR rulemaking in the 2010 timeframe."[203] Using the conservative assumptions and analysis in the ICAC Study, CATF has analyzed the adequacy of boilermaker labor likely needed to install the controls projected to be needed to comply with several emission control scenarios. This analysis demonstrates that more stringent mercury controls than EPA has proposed -- including the 92 percent mercury MACT reductions we propose -- can be implemented in the 2008 timeframe, with or without consideration of the IAQR and the potential controls needed to meet the requirements of that proposal.

Our methodology is very simple. First, we have used IPM runs from EPA's IAQR and MACT rulemakings, as well as an additional, more stringent, IPM run conducted by ICF for CATF (Run "CATF-14b"), to project the amount of FGD, SCR and ACI emission controls that will be needed to meet the emission targets of two different scenarios. The first scenario examines EPA's proposed MACT requirements alone—that

[201] *See* Docket ID No. OAR-2003-0053, dated March 30, 2004 (as corrected April 2, 2004)
[202] David C. Foerter, Institute for Clean Air Companies, "SO2 Control Technology Cost Estimates for Industrial Boilers" and "Analysis of Jobs Created and Labor Availability Under Bush and Carper Multi-Pollutant Bills" (March 30, 2004). Docket Id. Nos. OAR-2003-0053-1068 and OAR-2003-0053-1069.

is, without the IAQR. The second scenario is represented by CATF-14b, which assumes implementation of the IAQR as proposed by EPA on January 30, 2004, as well as tighter mercury MACT controls on coal-fired power plants.[204] We then have applied the conservative assumptions from the ICAC study to determine the demand, supply and timing of boilermaker labor needed to install that amount of controls, supplemented where needed by EPA assumptions in EPA's October 2002 Final Report entitled "Engineering and Economic Factors Affecting the Installation of Control Technologies for Multipollutant Strategies" (the "Engineering Report")[205] or in EPA's memo to the IAQR docket relative to boilermaker labor (the "Boilermaker Memo").[206]

According to EPA and CATF IPM runs, the following amount of additional FGD, SCR and ACI controls will be needed by 2010, over and above those projected as necessary for EPA's base case:

Table II-25. Additional FGD, SCR and ACI Controls Needed by 2010, Over and Above Those Projected as Necessary for EPA's Base Case.

	IAQR (GW)	MACT (GW)	CATF-14b (GW)	CATF14-b Minus IAQR (GW)
FGD	49	2	106	57
SCR	24	2	56	32

[203] ICAC Study at 1.
[204] Mercury emission limits for CATF 14b are as follows:
--units fueled on bituminous coal— 90% reduction;
--units fueled on sub-bituminous coal—rate limit of 1.5 lbs/TBtu;
--units fueled on lignite coal—rate limit of 4.5 lbs/TBtu.
These limits are sometimes hereafter referred to as "CATF14b MACT".
[205] EPA Document number EPA-600/R-02/073, available online at http://www.epa.gov/air/clearskies/pdfs/multi102902.pdf.
[206] Memo to the IAQR Docket entitled "An Analysis of the Impact of Boilermaker Labor Availability on the Installation of Pollution Control Equipment," January 28, 2004.

ACI	0	63	102	102

In the Engineering Report, EPA estimated that about 304 person-hours of boilermaker labor is needed to install one MW_e of FGD control, 350 person-hours per MW_e of SCR control, and 5 person-hours per MW_e of ACI control.[207] Thus, the boilermaker labor needed (in million person-hours) to install controls for the various scenarios is as follows:

Table II-26. Boilermaker Labor Needed to Install Controls for Various MACT and Other Scenarios (million person-hours).

	IAQR Boiler Maker Labor Demand	**MACT Boiler Maker Labor Demand**	**CATF-14b Boiler Maker Labor Demand**	**CATF14-b Minus IAQR Boiler Maker Labor Demand**
FGD	14.9	1	32.2	17.3
SCR	8.4	1	19.6	11.2
ACI	0	0.3	0.5	0.5
Total	23.3	2.3	52.3	29.0

Both EPA's own Engineering Report and the ICAC Study set forth a number of factors that EPA failed to consider in its analysis of the adequacy of future boilermaker labor supply in the IAQR proposal. The most fundamental of these factors is the obvious, and completely accurate, observation made by EPA itself, that "increasing

[207] Engineering Report at 41.

demand for boilermakers that would result from a multipollutant rule should stimulate more workers to enter the trade."[208] Others include:

- Skilled labor from closely allied trades, such as iron and steelworkers (union has 150,000 members), especially those who had been boilermakers in the past, could likely move into boilermaker work fairly quickly;[209]
- The Canadian boilermaker's union has 4,000 members, some of which could work on IAQR implementation projects;[210]
- Boilermakers in the union's shipbuilding division (about 30,000 members) could, depending on industry conditions, move over to the construction division quickly;[211]
- Fewer boilermakers may be needed than EPA estimated because its "analysis does not consider any of the synergies or efficiencies that have been demonstrated to occur on multiple unit retrofits or multiple-technology retrofits;"[212]
- Boilermaker population may grow more quickly than EPA assumed in the Engineering Report, based on the recent annual growth rate of 6.7 percent;[213] and
- EPA's analysis "also neglects [to consider] overtime, which would reduce the demand for [the number of] workers somewhat."[214]
- Faster, modular construction could reduce demand for boilermaker labor by up to 30 percent on particular projects.[215]
- EPA's analysis did not consider the availability of non-union workers, which ICAC found could increase the supply of boilermakers in non-union states by 30-40 percent.[216]

The ICAC Study took the extremely conservative approach of not increasing projected boilermaker labor resulting from many of these factors. ICAC did, however, assume that the combined impact of non-union boilermakers and modular construction would reduce boilermaker demand by 10 percent (even though ICAC found that

[208] Engineering Report at 43; ICAC Study at 3-4.
[209] Engineering Report at 43; ICAC Study at 3-4.
[210] ICAC Study at 3.
[211] Engineering Report at 43; ICAC Study at 3-4.
[212] Engineering Report at 41, 46.
[213] Engineering Report at 46. *See also* ICAC Study at 3, 7 (stating "[t]he boilermaker membership grew by over 10,000 members in a two year period during the NOx SIP Call from 16,000 to almost 27,000 members" This represents an average increase of over 30% per year).
[214] Engineering Report at 46.
[215] ICAC Study at 4. ICAC further observes: "The decision to use modular construction is typically driven by cost so as the labor demand increases, the pressure to perform modular construction will likely increase with it. Modularization will look especially favorable in states that have deregulated electricity markets." *Id.*
[216] *Id.* at 5.

boilermaker demand could be reduced by these factors by up to 30-40 percent).[217] Applying ICAC's conservative 10 percent reduction in demand for boilermaker labor results in a projected need for 21 million personperson-hours to install IAQR controls, 2.1 million person-hours to install controls to meet EPA's proposed MACT, alone; 47.1 million person-hours for CATF 14-b (IAQR plus CATF-14b MACT) and 26.1 million man hours for the CATF MACT related controls that are part of scenario CATF 14b.

The ICAC Study projected that approximately 1.425 million person-hours per month of boilermaker labor will be available for control equipment installations.[218] This labor could be applied to either IAQR or MACT controls, or both. Thus, the total time required for control equipment installations for the various scenarios would be as follows:

- IAQR—21/1.425 = 15 months
- MACT—2.1/1.425 = 2 months
- CATF 14-b (IAQR + CATF14b MACT)—47.1/1.425 = 33months.

Furthermore, the CATF14b controls can be broken down into controls attributable to IAQR requirements and those attributable to CATF14b MACT requirements. The IAQR requirements are set forth above, and require 15 months of boilermaker labor. The CATF 14b MACT requirements represent the remainder, and thus would require about 18 months of boilermaker labor.

The ICAC study noted that a conservative IAQR implementation schedule would allow 24 months (from October 2007 to September 2009) for the application of boilermaker labor to complete the IAQR installations. *Thus, it is clear that there will be more than adequate boilermaker labor and time to install controls to meet both the the IAQR and more stringent MACT requirements separately.*

[217] *Id*. at 8.

In order to determine the adequacy of boilermaker labor to implement the IAQR and MACT controls together, it is necessary to consider the likely timeframe for the installation of MACT-related controls. EPA is obligated by the terms of its settlement agreement with NRDC to promulgate its final rule by March of 2005. In the IAQR, EPA assumed that there would be no boilermaker labor utilized for the initial 15 months period following finalization of IAQR SIP requirements.[219] Assuming the same delay for MACT-related installations, boilermaker labor would be employed starting in June 2006. As indicated above, the MACT related installations in scenario CATF-14b would require 18 months of boilermaker labor, and thus would be completed by January 2008, in ample time to meet a March 2008 compliance deadline. Furthermore, the IAQR related installations would be completed within 15 months of October 2007, or by the end of 2008, again in plenty of time to meet the IAQR 2010 compliance deadline.

Thus, in conclusion, our analysis demonstrates that the supply of boilermaker labor should be adequate to complete installation of necessary controls for MACT by 2008 and for the IAQR by 2010. Delay beyond these deadlines is not justified.

E. EPA'S Complete Disregard for the Recommendations of the Federal Advisory Committee Act Working Group it Convened for The Utility MACT Rule Contravenes the Requirements of the Clean Air Act, and is Arbitrary, Capricious, and an Abuse of Discretion. Section 117 of the Clean Air Act specifies that,

> [i]n order to obtain assistance in the development and implementation of the purposes of this chapter, including [the development of]. . . standards, the Administrator shall from time to time establish advisory committees. Committee members shall include, but not be limited to, persons who are

[218] *Id*. at 8.
[219] Boilermaker Memo at 2.

> knowledgeable concerning air quality from the standpoint of health, welfare, economics or technology."[220]

Section 117(c) further mandates that the Administrator, to the "maximum extent practicable within the time provided, *consult* with appropriate advisory committees" prior to "publishing any standard under section 7411 or section 7412."[221] "Consult" is not defined in the Clean Air Act, nor is it defined in the Administrative Procedure Act. Legislative purpose, however "is expressed by the ordinary meaning of the words used."[222]

The Merriam-Webster's Collegiate Dictionary defines "consult" as "to have regard to: CONSIDER";[223] the Oxford English Dictionary, U.S. version, defines the verb "consult" as both to "seek information or advice from," and also to "seek permission or approval from."[224] EPA's proposal, by contrast, references its own Utility Working Group, which met from August 2001 to March 2003, only in passing and does not discuss its recommendations at all.[225] Although the Act requires that EPA "consult" with established advisory committees, "to the maximum extent practicable," in this instance that "consultation" was abruptly terminated before its conclusion. EPA's abrupt termination of the Utility Working Group and its subsequent failure to evaluate the Working Group recommendations, or even to include or discuss them in this proposal do not comport with section 117(c)'s clear requirement that the Agency "consult" with appropriate advisory committees.

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[220] 42 U.S.C. §§ 7417(a).
[221] 42 U.S.C. §§ 7417(a), (c)(3) (emphasis added).
[222] *Bluewater Network v. EPA*, 2004 U.S. App. LEXIS 10632, *25 (D.C. Cir. 2004).
[223] Merriam Webster's Collegiate Dictionary, Eleventh Ed. (2003).
[224] http://www.askoxford.com/concise_oed/consult?view=get
[225] 69 Fed. Reg. at 4656.

For example, although the Working Group had a diverse set of recommendations regarding the level of emissions reductions that EPA should require as MACT, none of them was as weak as EPA's proposal. According to the Northeast States for Coordinated Air Use Management, implementation of the recommended emission rates of the various stakeholder groups would have reduced annual mercury emissions from utility units to somewhere between 2 and 28 tons.[226] By contrast, EPA estimates that its MACT proposal, if finalized, would reduce mercury pollution only to 34 tons per year. Indeed, EPA's refusal to meaningfully consult with this group goes deeper; despite soliciting the input of the Working Group and receiving their recommendations that the agency conduct certain specific modeling runs to assess alternate MACT approaches, EPA has refused to perform that modeling to date.[227]

Similarly, EPA's proposed approach to subcategorization completely disregards the recommendations from the Utility Working Group and from experts from all but the industry sector. The Working Group presented EPA with a range of ideas about subcategorization – the vast majority of stakeholders favoring an approach that did not involve subcategorization by fuel rank. Indeed, a subset of the Working Group, representing a diverse group of Working Group participants reached agreement around the subcategorization issue, and presented their consensus document to the Agency.[228] This group included a number of environmental stakeholders, electric generating

[226] NESCAUM, "Mercury Emissions From Coal-Fired Power Plants: The Case for Regulatory Action," at p. ES-2 (Oct. 2003) ("the stakeholder groups that participated in EPA's Utility MACT Working Group have recommended a range of standards that equate to annual national emissions from coal-fired utility boilers of between 2 and 28 tons").
[227] *See* Letter from John A. Paul , Regional Air Pollution Control Agency, to Congressman Tom Allen (May 4, 2004).
[228] See Memorandum: Areas of Agreement Among Stakeholders in Utility MACT Working Group (October 30, 2002), available at http:// www.epa.gov/ttn/atw/combust/utiltox/caaacmactmemo.doc. (visited June 24, 2004).

companies and representatives of state and local governments.[229] However, EPA in its proposal neither discusses nor even references the Working Group recommendations or the consensus document presented to it. Nor does the EPA discuss any of the other Working Group recommendations, related to floor setting, variability, form of the standard, monitoring, or regulation of nickel emissions from oil-fired units. EPA instead chooses to ignore the Utility Working Group's efforts entirely, rather than giving them due consideration.

[229] This group included: (1) Environmental stakeholders: Clean Air Task Force; National Wildlife Federation; National Environmental Trust; Natural Resources Defense Council and Environmental Defense; (2) Utility stakeholders: Clean Energy Group: member companies include Conective, Consolidated Edison, Inc., Exelon Corporation; Keyspan, Northeast Utilities, PG&E National Energy Group, Public Service Enterprise Group Inc., and Sempra Energy; (3) State and local government: Northeast States for Coordinated Air Use Management (NESCAUM) which represents its eight member states: Connecticut, Massachusetts, Maine, New Hampshire, New Jersey, New York, Rhode Island, and Vermont.

III. EPA's PROPOSAL TO REGULATE MERCURY AND NICKEL EMISSIONS FROM UTILITY UNITS UNDER SECTION 111 OF THE ACT IS UNLAWFUL.

A. EPA does not have the authority to regulate HAPs under section 111 of the CAA.

1. Congress intended listed HAPs to be regulated under section 112, and EPA's interpretation of the 1990 amendments to 111(d) does not suggest otherwise.

Prior to the 1990 Amendments, the CAA explicitly barred EPA from regulating listed HAPs like mercury under section 111(d). Specifically, 111(d)(1) provided for a SIP-like program for "any air pollutant . . . which is not included on a list published under section 108(a) or 112(b)(1)(A)," and section 112(b)(1)(A) required EPA to maintain "a list which includes each hazardous air pollutant for which [the Administrator] intends to establish an emission standard under this section."[1] Thus, because EPA listed mercury as a HAP in 1971,[2] EPA could not issue section 111(d) standards of performance for source categories emitting mercury, but instead was required to regulate such categories under section 112.

The legislative history of section 111 is very instructive. Section 111(d) was not included in either the House or Senate version of section 111 (section 113 and 112 in the Senate and House versions of the bill, respectively).[3] Nor is there a mention of the provision in the legislative history of the conference committee.[4] However, the precursor of section 111(d) appears to have been section 114 of the Senate version of the bill.[5]

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[1] 42 U.S.C. §7411(d)(1) (1990).
[2] 36 Fed. Reg. 5,931 (Mar. 31, 1971) (codifying 40 CFR §61.01(a)).
[3] S. 4358, 91st Cong. § 113 (1970), *reprinted in* Comm. On Public Works, *A Legislative History of the Clean Air Act Amendments of* 1970, at 553-560 (1974) (hereinafter "*1970 Legislative History*"; H.R. 17255, 91st. Cong. § 112, *reprinted in 1970 Legislative History* at 920-24.
[4] *See id.* at 111-222.
[5] *See* Frank B. Cross, *Section 111(d) of the Clean Air Act: A New Approach to the Control of Airborne Carcinogens*, 13 *B.C. Envt. Aff. L. Rev*. 215, 233 & nn.114-117 (1986) (noting that S. 4358 section 114 was

Section 114 of S. 4358 was intended to provide authority to regulate "selected pollutants which cannot be controlled through the ambient air quality standards and *which are not hazardous substances*."[6] The Senate Committee Report elaborates:

> Knowledge and experience gained under the Air Quality Act of 1967 . . . has revealed that pollution agents and combinations of such agents fall into three general categories. The first of these categories are those pollution agents which are emitted from diverse stationary and moving sources into the ambient air and which are generally detectable through monitoring devices and systems. . . .
>
> The second category of air pollution agents includes those which are hazardous to the health of persons. . . .
>
> The third category of pollution agents includes those agents which are not emitted in such quantities or are not of such a character as to be widely present or readily detectable on a continuous bases with available technology in the ambient air. The presence of these agents is generally confined, at least for detection purposes, to the area of the emission source.[7]

In other words, the emission guideline program of section 111(d) was intended to be restricted to non-hazardous, non-NAAQS pollutants.

Notwithstanding this prior history, EPA points to two allegedly conflicting amendments to section 111(d) enacted in 1990 as an authorization to interpret the Act to permit HAP regulation under that section. As EPA notes, the House of Representatives put forward an amendment to section 111(d) which called for a SIP-like program for "any air pollutant . . . which is not . . . emitted from a source category which is regulated under section 112," whereas the Senate amendment provided for such a program for "any air pollutant . . . which is not included on a list published under section 108(a) or 112(b)." In short, the Senate amendment can be read in no other way except to have the same effect as the pre-existing law; it simply makes a change to the paragraph reference to account

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the precursor of section 111(b)). *Compare* S. 4358 § 114, *reprinted in 1970 Legislative History* at 560-64, *with* 42 U.S.C. §7411(d) (1976).

[6] *1970 Legislative History* at 227 (statement of Senator Muskie) (emphasis added).

for the fact that the section 112 list was not contained in subsection (b)(1)(A) any longer. The question then becomes whether the House amendment conflicts with the Senate amendment at all. Even if it does, the House amendment should not be read to trump the Senate's clear intent, so as to effect a significant change from the clear prior law; instead, there is a more reasonable interpretation. As discussed below, there are at least two explanations for the House language that do not conflict with the Senate amendment. Even if one could conclude that the amendments are in tension, EPA arbitrarily has ignored the most reasonable reconciliation of the two provisions.

First, EPA wrongly assumes that the House and Senate amendments cannot be read literally and in harmony. As noted above, the Senate amendment obviously means that listed HAPs, like mercury, cannot be regulated under section 111(d). Similarly, the House amendment – which precludes section 111(d) regulation for pollutants "emitted from a source category which is regulated under section 112" – is consistent with this ban on regulating HAPs under section 111. The HAPs released by Utility Units – like mercury, for instance – are "emitted from . . . source categor[ies] which [are] regulated under section 112," because there are numerous non-utility source categories for which MACT standards have been issued and from which these HAPs are emitted.[8] Accordingly, the House amendment – read literally and logically – prohibits EPA from using section 111(d) to regulate mercury emissions (and any other HAP emitted from a section 112 source category).

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[7] S.R. No. 91-1196, *reprinted in 1970 Legislative History* at 418.

[8] *See, e.g.*, 67 Fed. Reg. 77,562, 77,566 (Dec. 18, 2002) (proposed NESHAP for taconite iron ore processing; acknowledging mercury emissions from such sources); 68 Fed. Reg. 70, 903, 70,920 (Dec. 19, 2003) (NESHAP for mercury cell chlor-alkali plants; acknowledging mercury emissions from such sources).

Second, EPA also ignores the fact that both the House and Senate amendments reinforce the same principle – EPA cannot use section 111(d) to regulate HAPs, except where the CAA specifically tells EPA to do so. In characterizing these amendments as conflicting, EPA completely ignores the provision of the Act – section 129 – that explains, and allows EPA to implement, both amendments. Section 129 requires EPA to establish standards of performance for solid waste incineration units under the authority of section 111(b) (for new units) and section 111(d) (for existing units), but specifies that these standards must achieve MACT-level control.[9] It also specifies that such units cannot be regulated under section 112(d).[10] Given the requirements of section 129, both the House and Senate amendments to section 111(d) make perfect sense and are consistent with one another. Under the House amendment, HAPs from incineration units regulated under section 129 are not "regulated under section 112" and thus can be – indeed, section 129 specifies that they must be – regulated under section 111(d). Under the Senate amendment, EPA may not issue section 111(d) emission guidelines for HAPs listed under section 112(b), except where the more specific provision – section 129 – directs the agency to issue such guidelines for HAPs (and non-HAPs) from incineration units.

Third, even if these provisions could not be harmonized – which they can – there is a clearly better and non-arbitrary approach apart from the one EPA proposes to give effect to both provisions – EPA must read section 111(d) to preclude the regulation of HAPs on the section 112(b) list. That was the prior law, and it was the obvious intent of the "conforming amendment" from the Senate. Moreover, it is completely reasonable to

[9] 42 U.S.C. §§ 7429(a)(1)-(2).
[10] *Id.* § 7429(h)(2).

believe that, by referring to regulated source categories, the House amendment was intended to have the same effect as well. This is true because under section 112, the source category list flows directly from the pollutant list. *See* CAA § 112(c)(1). Thus, EPA should interpret the provision to serve its purpose – precluding HAP regulation under section 111(d) – and should not view the House amendment as a new and unmentioned authority for EPA to regulate HAPs differently.

The foregoing interpretations all provide a reasonable and internally consistent reading of the statute unlike EPA's proposed arbitrary approach, and are reinforced by other provisions of section 112, which generally forbid EPA from regulating emissions of listed HAPs from stationary sources under other parts of the Act. For instance, section 112(b)(6) provides that pollutants listed under section 112 are not subject to the prevention of significant deterioration (PSD) program.[11] Likewise, although section 112(n)(5) directs EPA to study the risks from hydrogen sulfide emissions and, based on its assessment, "implement a control strategy for emissions of hydrogen sulfide to protect human health and the environment . . . using authorities . . . including section[ ] 111," hydrogen sulfide is not a section 112(b) listed HAP. Congress understood that it was necessary not to list hydrogen sulfide under section 112(b) in order to permit EPA to regulate hydrogen sulfide under section 111.

[11] 42 U.S.C. § 7412(b)(6). Congress specifically identified the PSD program in the 1990 Amendments as a program to which pollutants listed under section 112 are not subject because this marked a conscious reversal of prior law. EPA can gain no support for its approach from the absence of a similar statutory term providing that pollutants listed under section 112 are not subject to section 111. This is so for several reasons: first, unlike PSD, section 111 had not covered HAPs previously; accordingly, there was no reason for Congress to highlight every other provision of the Act that did not apply to HAPs – like section 111 – and reaffirm that they still did not. Indeed, section 112(b)(6) proves that Congress knew how to overturn prior law with an express statutory amendments, which it plainly did not with an amendment applying section 111 to HAPs.

Moreover, the arbitrariness of EPA's reading is revealed by its creation of new problems that cause internal conflicts with the structure and objectives of section 112. The agency's interpretation – that section 111(d) applies to categories of sources not regulated under section 112, but emitting listed HAPs -- would permit the agency to promulgate standards of performance for source categories that were delisted as being low risk under section 112(c)(9). Similarly, EPA would have the discretion to regulate area sources of HAPs under section 111(d), despite the fact that section 112 specifies the manner in which Congress intended area sources are to be regulated.[12]

Even if it concludes that the House and Senate amendments are in conflict, EPA must not adopt its proposed reconciliation of the twin amendments to 111(d) because there is a canon of statutory interpretation that when two provisions are irreconcilably conflicting, "the last provision in point of arrangement must control."[13] In the CAA Amendments of 1990,[14] the Senate amendment (section 309) comes later than the House amendment (section 108(g)). Accordingly, the last in order – the Senate amendment – should prevail.

Because there actually is an easy reconciliation of the two amendments that EPA identifies as conflicting, EPA lacks the authority to adopt an alternative interpretation in an attempt to invent new regulatory authority to regulate HAPs under section 111(d) beyond the requirements of section 129. Because this new authority does not exist, EPA cannot use section 111(d) to issue standards of performance for HAPs from existing Utility Units. Because EPA cannot use section 111(d), EPA's claimed authority to

[12] *See, e.g.*, 42 U.S.C. § 7412(d)(5) (allowing EPA to apply "generally available control technologies")
[13] *See Lodge 1858, Am. Fed. of Gov't Employees v. Webb*, 580 F.2d 496, 510 (D.D.C. 1978) (citing numerous cases applying "established rule").
[14] Pub. L. 101-549.

rescind its regulatory determination evaporates, and regulation under section 112 remains "necessary," just as EPA determined in December, 2000.

Looking at mercury confirms the necessity of this conclusion. Mercury was regulated under section112, not section 111(d), prior to the 1990 Amendments, and a proper interpretation of these amendments would maintain this status quo. Given the ministerial nature of these two amendments and the lack of legislative history on the topic, it would be arbitrary to presume that Congress intended to effect such a momentous and substantive change in the manner in which one of the largest sources of one of the most pernicious HAPs is regulated.

2. Sections 112(c)(6) and 112(d)(7) do not support the assertion that HAP emissions can be regulated under provisions of the CAA other than section 112.

EPA argues that sections 112(c)(6) and 112(d)(7) "[support] the conclusion that HAP emissions could be regulated under other provisions of the CAA." 69 FR at 4684/3. This is wrong. There is nothing in the language of these provisions, legislative history, or the structure of the Act to support this conclusion.

EPA's proposal does not identify any language in section 112(c)(6) to support EPA's conclusion, and indeed, the agency offers no reading whatsoever other than a conclusory assertion. *Id.* Section 112(c)(6) reads as follows:

> With respect to alkylated lead compounds, polycyclic organic matter, hexachlorobenzene, mercury, polychlorinated biphenyls, 2,3,7,8-tetrachlorodibenzofurans and 2,3,7,8-tetrachlorodibenzo-p-dioxin, the Administrator shall, not later than 5 years after November 15, 1990, list categories and subcategories of sources assuring that sources accounting for not less than 90 per centum of the aggregate emissions of each such pollutant are subject to standards under subsection (d)(2) or (d)(4) of this section. Such standards shall be promulgated not later than 10 years after November 15, 1990. This paragraph shall not be construed to require the Administrator to promulgate standards for such pollutants emitted by electric utility steam generating units.

The first two sentences of section 112(c)(6) offer no support for EPA's conclusion, under any conceivable reading. The final sentence of the provision offers no support for this conclusion in and of itself either. The sentence says or implies *nothing* about authority to regulate HAP emissions under other provisions of the Act.

To the extent that EPA is reading this final sentence as an implied cross-reference to section 112(n)(1)(a), this reading fails to yield support for EPA's conclusion either. As discussed elsewhere in these comments, section 112(n)(1)(a) provides no authority or implication of authority to regulate HAP emissions under other provisions of the Act. Nothing in the language of section 112(c)(6) alters that fact.

There is also nothing in the Act's legislative history to indicate or imply that HAP emissions could be regulated under other provisions of the Act, based upon any support from section 112(c)(6). To the contrary, as discussed elsewhere in these comments, the legislative history is replete with indications that Congress intended EPA to regulate HAP emissions only under section 112.

Likewise, the proposal does not identify any language in section 112(d)(7) to support EPA's view that regulating HAPs under section 111 might be permissible, and indeed, the agency offers no reading whatsoever other than a conclusory assertion.[15] That section provides:

> No emission standard or other requirement promulgated under this section shall be interpreted, construed or applied to diminish or replace the requirements of a more stringent emission limitation or other applicable requirement established pursuant to section 7411 of this title, part C or D of this subchapter, or other authority of this chapter or a standard issued under State authority.

[15] *See* 69 Fed. Reg. at 4,684.

Section 112(d)(7) is not a direct grant of authority to EPA to regulate HAP emissions under other (non-section 112) provisions of the Act. Nor does section 112(d)(7) contemplate or imply such regulation.

Section 112(d)(7) is concerned with ensuring that interpretation, construction or application of section 112 requirements do not diminish or replace requirements under state authorities or other Clean Air Act provisions, including section 111 and parts C or D of title I. In this respect, section 112(d)(7) merely serves a function akin to that of a savings clause. Again, it does not operate as a grant of authority to EPA in any way; rather, it represents a prohibition on EPA adopting section 112 standards that diminish or replace the aforementioned requirements.

It is incorrect to read section 112(d)(7) as direct or implied authority for the other identified "applicable requirements" being able to regulate HAP emissions, if that is the way in which EPA purports to find support for the conclusion that HAP emissions could be regulated under other provisions of the CAA. In other words, if EPA is implying that section 112 standards could logically "diminish or replace" the requirements of section 111 or other applicable requirements, only if those latter requirements regulated HAPs as well, that reading is plainly wrong for several reasons.

First and foremost, the argument proves too much. Since there is no distinction drawn in section 112(d)(7) between section 111 requirements, and those under parts C or D, or other Clean Air Act or state authorities, EPA's argument leads to the absurd result that section 112(d)(7) supports the conclusion that any of these requirements or authorities could be used to regulate HAPs. This is plainly erroneous, since the many requirements within that wide-open universe of federal and state authorities clearly do not

each regulate HAPs. It is only EPA's tortured reading of section 112(d)(7), attempting to impute indirect authority to regulate HAPs where none exists, that leads to this absurd result. Under well-established canons of judicial interpretation, the statute should not be read to create this absurd result.

Second, EPA's reading is incorrect, because one of the very Clean Air Act provisions listed in section 112(d)(7) – part C of title I – is specifically *inapplicable* to HAPs. *See* CAA § 112(b)(6). Congress would not have included part C in section 112(d)(7) -- at the same time that it adopted section 112(b)(6) in the 1990 Amendments – if such inclusion were meant to convey authority under part C to regulate HAPs, as EPA would have it. Again, EPA's incorrect reading creates an internal statutory contradiction, where none exists if the proper reading of section 112(d)(7) is applied.

Third, EPA is wrong because another of the provision listed in section 112(d)(7) – part D of title I – also does not apply to HAPs. The nonattainment provisions contained in part D apply only to pollutants for which a NAAQS has been established – not to HAPs.

Finally, section 112(d)(7) is plainly intended to operate to prohibit EPA from employing section 112 standards to replace or diminish other regulations of criteria air pollutants or precursors. For example, a VOC RACT limit or a SIP particulate matter limit may not be replaced or diminished by section 112 standards, even if the VOCs or particulate matter is hazardous. RACT and SIP limits, however, apply to VOCs or particulate matter legally as criteria pollutants (or precursors), and *not* as HAPs. Section 112(d)(7) simply reflects Congressional recognition of this pre-existing federal and state system regulating criteria pollutants or precursors that *also* happen to be hazardous.

Congressional inclusion of section 111 requirements in the same section 112(d)(7) list as part C or D requirements, and other Clean Air Act and state authorities, demonstrates that Congress did not view section 112(d)(7) as a direct or indirect recognition of authority under section 111 to regulate HAPs. More broadly, section 112(d)(7) provides no support for the conclusion that HAP emissions could be regulated under other provisions of the CAA.

As with section 112(c)(6), there is also nothing in the Act's legislative history to indicate or imply that HAP emissions could be regulated under other provisions of the Act, based upon any support from section 112(d)(7).

B. EPA's Attempt To Rescind Its December 2000 Regulatory Determination And Listing Of The Utility Industry Is Unlawful.

EPA argues that it has authority to rescind the regulatory determination and the prior listing of Utility Units under section 112(c) because it has concluded that regulating mercury under section 111 is "adequate" to address the public health threats posed by utility units, and therefore regulation under section 112 is no longer "necessary." There are several basic flaws with this contention.

First, EPA neither quantifies the benefits of mercury control in this rulemaking, nor describes what considerations went into its conclusion that the section 111 program is "adequate"; this is the essence of arbitrary decisionmaking.

Second, as proposed, EPA's section 111 scheme results in far weaker controls than a legitimate MACT standard, rendering it inadequate.

Third, regulation under section 111 is plainly not an "adequate" replacement for section 112 regulation, when one considers the statutory structure of the CAA, and the

number of ways in which section 112 is more comprehensive and stringent than section 111.

Fourth, EPA cannot rescind the regulatory determination because it was designed to be a one-time event, which already has occurred, and EPA must abide by the consequences, or use the statutorily-prescribed route – section 112(c)(9) – for avoiding MACT requirements.

Fifth, EPA adopts an arbitrary reading of section 112(n)(1)(A) in order to find that mercury and nickel must be regulated from electric utility steam generating units at the same time that the agency circumvents the statutorily-prescribed method – section 112 – for doing so.

Finally, because the CAA compels EPA to list "all" categories of major sources of HAPs, and because it is accepted fact that Utility Units are major HAP sources, the listing decision cannot be withdrawn.

1. EPA acts arbitrarily and capriciously in concluding that regulation under section 111 is "adequate" to deal with Utility Units' mercury pollution.

EPA claims that its regulations under section 111 of the CAA "can be employed to adequately address the hazards to public health resulting from Hg and Ni emissions from Utility Units,"[16] but this conclusion is arbitrary and capricious because it is based on little more than hope, not on reliable information.[17] Throughout the preamble to the proposed rule, EPA proclaims that it lacks the necessary information to correlate power plant pollution control with human health effects. For instance, the agency says that it "cannot currently quantify whether, and the extent to which, the adverse health effects

[16] 69 Fed. Reg. at 4,684.

occur in the populations surrounding these facilities and the contribution, if any, of the facilities to those problems."[18] Likewise, EPA lists eight separate known or potential health effects that are associated with mercury exposure – neurological disorders, learning disabilities, developmental delays, cardiovascular effects, altered blood pressure regulation, increased heart rate variability, myocardial infarctions, and reproductive effects in adults – but states that "the available science does not support quantification of the[ ] benefits [of reducing mercury pollution] at this time . . . ."[19] Thus, EPA has no empirical data with which to compare one mercury pollution control strategy to another, and accordingly has no factual basis upon which to conclude that its section 111 proposal is an "adequate" alternative to protect the public health from the threats of mercury pollution.

2. The record of this rulemaking disproves EPA's belief that section 111 will control mercury pollution "adequately," when compared to section 112 regulation.

A simple comparison of the agency's section 111 control program to the speedy and significant reductions that faithful implementation of the MACT requirements will achieve proves that EPA's proposal is nowhere near an "adequate" replacement for section 112 regulation. Specifically, EPA's own modeling reveals that its section 111 proposal will permit emission levels to remain significantly elevated long into the future, whereas a responsible MACT approach will require approximately a 90 percent reduction in mercury pollution within 3 years. In the face of these figures, it is arbitrary and

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[17] *See Horsehead Resource Dev. Co., Inc. v. Browner*, 16 F.3d 1246, 1269 (1994) ("speculation is an inadequate replacement for the agency's duty to undertake an examination of the relevant data and reasoned analysis; thus the EPA's action . . .was arbitrary and capricious").
[18] 69 Fed. Reg. at 4,657.
[19] 69 Fed. Reg. at 4,708, 4,711.

capricious to conclude that the replacement program is a sufficient substitute for aggressive controls on mercury.

As discussed above, our analysis shows that MACT floor controls, after eliminating EPA's unlawful subcategories and the obviously improper statistical adjustments for "variability," would result in annual mercury emissions of approximately 4 tons, for a reduction from 1999 levels of 92 percent, to say nothing of implementing above-the-floor MACT. (Even accepting EPA's unlawful subcategories and ignoring above-the-floor controls results in annual emissions of approximately 12 tons.) Under the CAA, MACT standards must become effective for existing sources within three years of promulgation.[20] Thus, the standards should reduce emissions (currently estimated to be approximately 48 tons per year) by approximately 44 tons per year (or, at worst, 36 tons), and start doing so by 2008.[21]

By contrast, EPA's proposal would establish annual emission caps of approximately 34 tons in 2010,[22] and 15 tons in 2018, and would permit these levels to be exceeded if sources obtain pollution allowances that previously were banked (by sources who over-controlled in the program's early years) or if they purchased "safety valve" allowances at a pre-established price. EPA's own modeling reveals what pollution levels the agency thinks this program will produce; according to an IPM modeling run in the docket of this rulemaking labeled "Proposed Hg Trading Rule + IAQR," EPA predicts

[20] 42 U.S.C. § 7412(i)(3).
[21] As noted above, pursuant to a settlement agreement with NRDC, EPA is presently under an obligation to promulgate final standards by March 15, 2005.
[22] In fact, EPA declares that it is not certain what the first phase cap will be; it states that recent modeling indicates that emissions will be reduced to 34 tons per year as a co-benefit of NOx and SO2 controls, and proposes to find that such reductions constitute the best system of mercury emission reductions for the near term. *See* 69 Fed. Reg. at 4,698.

that mercury emissions from affected units under its preferred approach will be as follows:[23]

Time Base: Seasonal/Annual	2005-2007	2008-2012	2013-2017	2018-2022	2023-2030
Standard - [Lb]	0.4000E+09	0.6800E+05	0.6800E+05	0.3000E+05	0.3000E+05
-Emissions at Affected Plants [Lb]	0.8226E+05	0.6089E+05	0.5513E+05	0.4997E+05	0.4444E+05
-Less Allowances Purchased [Lb] MER	0.000	0.000	0.000	0.000	-0.1444E+05
-Plus Allowances Sold [Lb] MER	0.000	0.000	0.000	0.000	0.000
-Plus Allowances Banked [Lb]	0.000	7109.	0.1287E+05	0.000	0.000
-Less Allowances Withdrawn [Lb]	0.000	0.000	0.000	-0.1997E+05	0.000
Total [Lb]	0.8226E+05	0.6800E+05	0.6800E+05	0.3000E+05	0.3000E+05

In brief, EPA expects actual emissions to be roughly 41 tons in 2005-2007, 30 tons in 2008-2012, 28 tons in 2013-2017, 25 tons in 2018-2022, and 22 tons in 2023-2030. As one can see from the chart reproduced above, EPA expects sources to bank an annual average of nearly 10 tons of allowances in the years 2008-2017, and to use them up in the years 2018-2022. The agency also anticipates that sources will purchase approximately 7 tons of allowances annually (presumably using the "safety valve" provisions) in the years 2023-2030.

A recent modeling analysis by the Energy Information Administration of the Clear Skies Act – which has mercury emissions caps and compliance schedules essentially the same as EPA's section 111 proposal -- predicts even less of an emissions effect from the agency's planned trading program. EIA finds that "the use of early credits allows [Utility Units] to delay meeting the 2010 34-ton mercury emissions cap until 2013. In the longer term, because of the mercury safety valve, mercury emissions are projected to remain above the 15-ton emission target that takes in effect in 2018 throughout the projections," i.e. until at least2025, the last year analyzed by EIA.[24] EIA

[23] U.S. EPA, "Proposed Hg Trading Rule + IAQR\IPM Run Output EPA216_PM54 -- Proposed Hg Trading Rule + IAQR -- Regional Summary Report," Docket Item OAR-2002-0056-0338 (undated).
[24] Energy Information Administration, "Analysis of S.1844, the Clear Skies Act of 2003; S.843, the Clean Air Planning Act of 2003; and S.336, the Clean Power Act of 2003, at 31 (May 2004).

also states that "[i]n 2010 under the Inhofe bill [which mirrors the section 111 proposal], mercury emissions are expected to be 40 tons (versus a cap of 34 tons), while in 2025 emissions are 29 tons (versus a cap of 15 tons)."[25]

The foregoing summary demonstrates how much weaker EPA's proposed pollution program is than the MACT standard the law requires it to promulgate. However, to fully appreciate the difference between the two, one must consider the cumulative effect of decades of weak regulation, as mercury persists in the environment once it is released. Using EPA's modeling, cumulative emissions from 2005-2025[26] would be 604 tons under the section 111 approach, and would be 260 tons under the MACT approach.[27]

3. EPA acts arbitrarily and capriciously in implying that section 111 regulation, including a cap-and-trade approach, is adequate to address the harmful regional and local health and ecological impacts of HAP emissions from power plants.

EPA's proposed section 111 regulation, including its cap-and-trade approach, will not adequately address the harmful regional and local health and ecological impacts of HAP emissions from power plants previously identified by the agency. The section 112(n)(1)(A) regulatory finding relied extensively and directly upon these local and

[25] *Id.* at vii.

[26] According to EPA, 2026 is the end year for the modeling, and should not be used for analysis. Thus, the above calculation stops at 2025. However, it is noteworthy that EPA's modeling does not identify a date by which sources will reduce mercury pollution to the cap level of 15 tons. Even if sources do reach this level someday, it will still exceed the level that MACT will achieve in 2008, so emissions will remain higher under the EPA plan for the foreseeable future.

[27] This calculation assumes emissions of 48 tons from 2005-2008, and 4 tons from 2009-2025. However, because MACT is an emission rate limit, not a pollution cap, it is possible that these levels might be different as a consequence of new source construction and existing source retirement. There is not reason to believe these potential fluctuations will be material; as discussed above, our modeling of a stricter alternative to EPA's proposed MACT floors results in 12 tons per year of mercury emissions, and that level remains constant through the modeling period. Indeed, because of CAA requirements to revisit pre-existing MACT standards to account for residual risk, 42 U.S.C. § 7412(f)(2) and to reflect "developments in practices, processes, and control technologies," *id.* § 7412(d)(6), the MACT limit may well be revised in the future to require more significant pollution controls.

regional harms in finding it necessary and appropriate to regulate power plants under section 112, and in adding power plants to the list of source categories under section 112(c).[28]

EPA previously has recognized the adverse impacts on local communities that could arise from a trading scheme, even were that trading to be implemented under section 112 (which it may not be lawfully), with source-by-source MACT:

> The EPA, however, recognizes and shares concerns about the local impacts of mercury emissions and any regulatory scheme for mercury that incorporates trading or other approaches that involve economic incentives must be constructed in a way that assures that communities near the sources of emissions are adequately protected. Thus, in developing a standard for utilities, the EPA should consider the legal potential for, and the economic effects of, incorporating a trading regime under section 112 in a manner that protects local populations.

65 Fed. Reg. 79830, 79831 (Dec. 20, 2000).[29] These "concerns" and harms are amplified all the more in the cap-and-trade scheme proposed by EPA under section 111. EPA's trading proposal does not and cannot safeguard populations against regional and local HAP emissions, and the proposal does not begin to offer evidence, much less make the case, to the contrary.

EPA's proposal brushes past these local and regional adverse impacts and pretends that a cap-and-trade program for Hg emissions from utilities qualifies as the "best system of emission reductions" that "has been adequately demonstrated," by pointing to experience under Title IV's acid rain program and the NOx SIP Call's cap-

[28] *See e.g.*, 65 Fed. Reg. 79825 *et seq.* (Dec. 20, 2000); U.S EPA, *Mercury Study Report to Congress* (1997) (EPA 452/R-97-003), at 3-15 to 3-20, 3-32 (Vol. I); at ES-10 (Vol. II); & at ES-8, 3-25 (Vol. VI).

[29] As discussed elsewhere in these comments, EPA may not lawfully adopt a section 112 trading program – or any "system-wide or pooled performance standard," 69 Fed. Reg. 4662 -- under section 112(d) or any other section 112 authority. It is incorrect and disingenuous for EPA to say merely that "EPA has not resolved" whether such approaches are allowed under section 112(d). To the contrary, EPA has *never* authorized or even proposed such approaches before – despite appeals from industry to do so – and this disallowance represents the resolution and the consistently followed position of the agency. Trading and the variations that EPA describes are simply not allowed under section 112.

and-trade program. But these are arbitrary and capricious comparisons that do not support EPA's pretense for the following reasons.

First and foremost, Title IV and the NOx SIP Call operate against a backdrop in which there are multiple federal, state and local control measures that apply to the regulated units beyond the cap and allowance system. Federal SIP measures, NSPS provisions, NSR requirements – all of these are part of the Clean Air Act fabric designed to safeguard local and regional air quality and public health while authorizing national or regional cap-and-trade programs to address national or regional emissions. EPA's section 111 (and section 112) trading proposals would begin operating without *any* of these local or regional HAP controls on power plants, so the experiences in which EPA purports to find reassurance in fact reinforce the conclusion that the proposed HAP trading approaches will not protect against local and regional harms.

Second, the proposal claims that EPA's experience with the acid rain program limiting SO_2 emissions leads the agency not to "anticipate" local health-based concerns under a national mercury trading program.[30] Yet experience with the acid rain program leads to just the opposite result. As revealed in the April 4, 2002 report "Darkening Skies: Trends Toward Increasing Power Plant Emissions,"[31] significant numbers of power plants operating under the Title IV national cap have actually increased their SO_2 emissions even as the national cap declined. This has even translated to individual states experiencing overall increases in SO_2 emissions over extended time periods of concern – a concern exacerbated here by the bio-accumulative nature of mercury and other power plant HAPs. As the Executive Summary of this report states:

[30] 69 Fed. Reg. at 4702.
[31] Hereby incorporated by reference, http://www.cleanairnow.org/cleanairnow.asp?id2=6275.

> • From 1995 to 2000, over which time the national SO_2 cap took effect, 300 of the dirtiest 500 power plants increased their SO_2 emissions, even while the cap resulted in an overall decrease of about five percent. This means that residents of 300 local communities are being exposed to higher levels of soot from nearby facilities.
>
> • There were seven states that had a net SO_2 increase of 20,000 tons or more over this six-year period. These "sooty seven" states are, from largest to smallest emission increases: North Carolina, New York, Mississippi, Georgia, Washington, South Carolina and Maryland.
>
> • One plant, the EC Gaston plant in Alabama, increased its SO_2 emissions by 62,000 tons per year, a bigger jump than any other plant in the nation. This plant is just a few miles from Birmingham, Alabama.

Third, EPA's proposal is arbitrary and capricious in finding a section 111 cap-and-trade approach to be adequate to address the harmful regional and local health and ecological impacts of HAP emissions from power plants, based upon the different and weaker standard for local impacts that the proposal employs:

> In this discussion, we are assuming that a power plant may lead to a hot spot if the contribution of the plant's emissions of Hg to local deposition is sufficient to cause blood Hg levels of highly exposed individuals near the plant to exceed the RfD. For the purposes of choosing a regulatory tool to address hot spots, the relevant question is what is the contribution of these plants to hot spots under a cap-and trade approach, relative to their current contribution and their projected contribution under a traditional section 112 approach.[32]

In other words, EPA's proposal is comparing not the total amount of local mercury emissions remaining under a section 111 trading scheme versus a section 112 MACT approach; rather the agency's approach defines adverse local impacts ("hot spots") to be only levels that "cause blood Hg levels of highly exposed individuals near the plant to exceed the RfD." *Id.*

But this is an arbitrary comparison that ignores the nature, objectives and achievements of section 112 MACT standards: these are not health-based standards (in

the first instance), but technology-based standards that achieve the maximum reductions achievable by MACT within three years. In all cases, HAP reductions achieved by the lawful MACT emissions rates called for in these comments will out-perform the weaker reductions achieved by the proposal's section 111 approach (due to the weak caps and extended compliance time frames found in that approach). And any remaining risks following application of "traditional" MACT will be addressed by a mandatory, prescriptive and rigorous residual risk process that the section 111 trading proposal lacks altogether.

EPA may not lawfully find its section 111 proposal to be an adequate substitute for section 112 MACT regulation by resorting to a local impacts test that ignores (or excuses) the higher local HAP emissions that will result from that 111 approach. Indeed, EPA's sleight of hand is itself evidence that even the agency recognizes that higher levels of local mercury emissions will result from its section 111 approach than under MACT. Finally, EPA's own administrative record in developing this proposal reveals the relentlessly results-oriented nature of EPA's section 111 approach; the extent to which public health and environmental impacts from that weaker approach were an afterthought; and the fact that EPA was keenly aware of this and proceeded with its unlawful section 111 approach nonetheless. A November 26, 2003 draft of the section 111 proposal, a mere 19 days before the Administrator signed the proposal, contains the following astonishing indication of just how far agency officials were from developing any analysis to demonstrate that their preferred approach would protect public health:

> Insert text explaining why regulation under section 111 adequately addresses the confirmed hazards to public health associated with Hg and Ni emissions and the

[32] 69 Fed. Reg. at 4702.

> environmental effects of Hg when the section 111 standards will be implemented somewhat later than the statutory compliance date for the MACT standards.[33]

As already noted, EPA failed to develop the analysis or factual record to demonstrate that section 111 would adequately address the public health and environmental impacts of utility HAPs – a failing that is not altogether unsurprising in light of this notation's proof that such concerns were nothing more than an afterthought. And of course what this passage refers to wanly as a "somewhat later" section 111 implementation timeframe is a delay of 8 years until the phase II cap requires any mercury controls beyond co-benefits; and a delay of at least 14 years or more until the phase II cap would be achieved in practice under EPA's own modeling.

For all of these reasons, the EPA proposals are arbitrary and capricious in implying that a section 111 or section 112 cap-and-trade approach is adequate to address the harmful regional and local health and ecological impacts of HAP emissions from power plants.

4. EPA misreads the Clean Air Act as providing authority to adequately regulate mercury emissions section 111.

Lacking a factual foundation for its conclusion that section 111 regulation is "adequate" to protect public health from mercury pollution, EPA resorts to a legalistic

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33 "Proposed Revision of Regulatory Finding on the Emissions of Hazardous Air Pollutants from Electric Utility Steam Generating Units and Proposed Standards of Performance for Mercury and Nickel From New Stationary Sources and Emission Guidelines for Control of Mercury and Nickel From Existing Sources: Electric Utility Steam Generating Units; Proposed Rule," at 58, November 26, 2003 (draft) (attached).

Indeed, as discussed elsewhere in these comments, the agency's own professional staff in charge of the rulemaking were even unaware as late as September 2003 that administration political officials were planning to abandon section 112 rulemaking in favor of the unlawful and ill-considered section 111 approach. E-mail from William Maxwell, U.S. EPA, to Stephen Becker, Wholesale Markets Energy Group (September 26, 2003), attached as Appendix 8.

argument – it interprets section 111 in such a sweeping fashion that it concludes that section is "adequate" to deal with any concerns that may arise. Specifically, EPA notes that section 111 calls for "standards of performance," which are to "reflect[ ] the degree of emission limitation achievable through the application of the best system of emission reduction (taking into account the cost of achieving such reduction and any non-air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.,"[34] then goes on to argue:

> The EPA believes that the gravamen of this definition is the phrase, ''best system of emission reduction.'' While the parenthetical following this phrase obligates EPA to consider the factors specified in that parenthetical, the term ''best system'' is not defined, and implicitly accords broad discretion to the Administrator, which includes the demonstration of such systems. The term ''system'' implies a broad set of controls, and the term ''best'' confers upon the Administrator the authority to promulgate regulations requiring controls that he considers superior.
> * * *
> This broad authority conferred on the Administrator means that section 111 constitutes an adequate mechanism for regulating Hg emissions from coal-fired Utility Units, and Ni from oil-fired units. Because the Administrator may consider a broad range of factors in developing standards of performance under section 111, the Administrator has the authority to develop control levels to address the emissions of Hg and Ni that warrant regulation.[35]

EPA's arguments are contrary to the Act and otherwise arbitrary and capricious and an abuse of the agency's discretion. The proposed interpretation of the term "standard of performance" in section 111 is so broad that it conflicts with, or renders superfluous, other parts of the CAA. Moreover, EPA overlooks numerous provisions of the CAA that accord special priority to standards developed under section 112, but not section 111.

First, EPA's interpretation proves entirely too much. As EPA interprets it, section 111 is so broad that it will always be an adequate substitute for section 112 regulation.

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[34] 42 U.S.C. § 7411(a)(1).
[35] 69 Fed. Reg. at 4,686.

Because EPA finds in section 111 the ability to create any pollution control regime the Administrator deems "superior," we are unable to conceive of a circumstance under which such a "superior" program will not be – at least in theory – "adequate" to the task of controlling power plant pollution. This is especially so where, as here, EPA interprets section 111 to permit the agency to revisit its control requirements if they prove in fact to be inadequate; after acknowledging that "the overall cap level may not eliminate the risk of unacceptable adverse health effects of Hg emissions," EPA says that it "retains the authority to revise its conclusions as to what constitutes the 'best system' of emissions reductions for existing sources, and, therefore, to revise the standard of performance, to require additional reductions or controls to address such risks. . . ."[36] The agency's interpretation of section 111 – which seems to assume that EPA may create any pollution control program to address any threat it identifies – is so broad that if it were upheld, EPA could never properly make the finding in section 112(n)(1)(A) that regulation under section 112 is "necessary." However, it is a basic principle of statutory construction that one should not read a statutory provision in a way that renders another provision superfluous,[37] and EPA's approach does just that.

Another reason not to accept the agency's view of section 111 is that the terms to which EPA gives such broad meaning – "best" and "system" – appear elsewhere in the CAA, and if they are given the same interpretation in other sections, statutory requirements that have a widely-accepted meaning could be open to reinterpretation in ways that obviously undercut their purpose. For example, one of the clearest provisions of the CAA is the MACT floor requirement of section 112(d) – existing facilities must

[36] *See* 69 Fed. Reg. at 4,686-87.
[37] *See, e.g.*, *Dastar Corp. v. Twentieth Century Fox Film Corp.*, 123 S.Ct. 2041, 2048 (2003).

clean up their pollution as well as the average of the least polluting 12 percent of sources. But this provision also uses the terms "best" and "system"; MACT is supposed to be achieved by the "application of measures, processes, methods, *systems* or techniques," and is supposed to reflect the emissions achieved by the "*best performing*" sources. If "best" is understood to be qualitative ("controls that [the Administrator] considers superior") instead of quantitative, and "system" can include a cap-and-trade program, then the MACT floor is a meaningless concept – EPA can determine that the best system for controlling HAPs from any given industry is to ignore what the cleanest sources in the industry are doing, and instead promulgate a trading scheme based on the emissions of the sources that EPA deems "best," even if those sources are not the cleanest-operating facilities in the category.

Once one dispenses with EPA's plainly overbroad interpretation of section 111, it becomes clear that section 111(d) is in no way an "adequate" substitute for section 112 regulation, because of the myriad ways in which the Act requires section 112 regulations to be more stringent than section 111 standards. First, of course, is the required stringency of standards under each section. Existing section 111 regulations establish a loose, flexible regulatory regime under which states may grant exceptions from applicable emissions guidelines under section 111(d) for "[u]nreasonable cost," "[p]hysical impossibility," and a catch-all category of "other factors specific to the facility (or class of facilities) that make application of a less stringent standard or final compliance time significantly more reasonable."[38] This loose regulatory regime, known commonly as the best demonstrated technology (BDT) standard, is a far cry from the

[38] 40 C.F.R. § 60.24(f).

stringent and prescriptive (average of the best-forming 12 percent) MACT regime that Congress and EPA use to deal with HAPs—including mercury—under section 112.

The second obvious difference between section 111 and section 112 is the requirement in section 112(f) that EPA revisit the source categories regulated by MACT standards and reduce any residual risk to public health to ensure an adequate margin of safety. While EPA says that it "*retains the authority*. . . to require additional reductions or controls to address such risks" under section 111, 69 Fed. Reg. at 4,686-87 (emphasis added), the agency's interpretation has the effect of circumventing the *mandatory* duties that the Act imposes upon EPA to protect public health with an ample margin of safety pursuant to section 112(f)'s residual risk program. There is no statutory obligation for the agency to even conduct or act upon such risk analysis under section 111; Congress did not intend for section 112(f)'s mandatory residual risk protections to be decided based upon some future administration's good graces or whims, and that situation cannot lawfully be created by evading section 112 residual risk in favor of an optional section 111 process. EPA's plaintive retention of authority argument amounts to an acknowledgment of the obvious -- that section 111 is by no means an adequate substitute for the mandatory, protective, specific and prescriptive measures in section 112, including section 112(f).

In addition, the optional risk review and revision process described by the agency under section 111 highlights another deficiency vis-à-vis section 112(f): EPA is subject to mandatory duty lawsuits for failure to undertake residual risk rulemakings within 8 years after promulgation of MACT standards (section 112(f)(2)(A)). By contrast, EPA's invented "retention of authority to revise" argument releases the agency from this 8-year

statutory deadline, frees the agency from accountability to the public and courts, and allows unacceptable cancer risks and other health hazards to continue past the time that Congress intended.

Moreover, EPA lacks statutory authority under the general language of the "best system" standard to meet or exceed the protectiveness of the one in one million cancer standard of section 112(f)(2). Congressional application of the one in one million risk standard is very selective under the Act, and EPA lacks authority to invent that (or another) specific qualitative standard under the general "best system" language. EPA identifies no precedent for the agency resorting to creation of such a specific qualitative risk standard under section 111 or any other provision of the Act, and there is no such precedent. Finally, replication of or improvement upon the one in one million cancer risk standard under the guise of section 111's "best system" language would not survive certain industry legal challenge, further demonstrating section 111's inferiority to section 112.

A third difference between section 111 and section 112 is that under section 113 of the Act, an EPA compliance order under section 112 can take effect without giving the affected source an opportunity to consult with the Administrator; that is not true for other EPA compliance orders under the Act, including section 111.[39]

Fourth, although the CAA generally restricts citizen suits until the alleged violator has been given 60 days prior notice, actions enforcing violations of section 112 can proceed immediately.[40]

[39] 42 U.S.C. § 7413(a)(4).
[40] *Id.* § 7604(b).

Fifth, the CAA allows EPA to exempt sources in certain territories from a number of pollution control requirements, but not from section 112 standards.[41]

Finally, although the CAA exempts a number of "clean coal" technology projects from section 111 requirements, it contains no similar exemption from section 112 standards.

It is no response for EPA to recite excuses why the agency deems it acceptable as a matter of policy to abandon or ignore these section 112 prescriptions and protections: Congress – and the language and structure of the Act – have simply not given EPA that choice.

5. EPA's regulatory determination was a singular event with legal consequences; it cannot simply rescind, or "un-make" that decision today, particularly where no new factual evidence supports such an action.

EPA's rescission proposal rests on a fundamental fallacy – that it can undo history, based on no new scientific evidence, and change the determination that it made in December 2000 that regulating utility HAPs under section 112 is "appropriate and necessary." The language of the CAA clearly describes the regulatory determination as a one-time event, a clear fork in the road of the regulatory process. EPA's view that this determination can be re-opened and changed now (and presumably again later, and again after that) introduces a completely unreasonable layer of uncertainty into the CAA, and must be rejected as an illogical and arbitrary interpretation of the law.

Section 112(n)(1)(A) provides for a linear progression of events. First, EPA was required to study the pollutants emitted by power plants and to examine the hazards to public health that would occur, after other CAA requirements ran their course and – as a

[41] *Id.* § 7625-1.

coincidental effect of controlling other pollutants – lowered HAP emissions. Second, EPA was obliged to submit a report to Congress incorporating the results of the study, and surveying "alternative control strategies." Third, EPA was to make a finding regarding whether regulating Utility Units under section 112 is "appropriate and necessary." Finally, if EPA found such regulation "appropriate and necessary," the agency was required to regulate power plants under section 112.

EPA has completed the first three steps of this four-step process.[42] In addition, as part of the third step in this Congressionally mandated process, the Agency codified its regulatory determination by adding Utility Units to the list of source categories subject to MACT, and defended its determination in court. Having done so, the agency has incurred a specific obligation under the Act – regulate Utility Units under section 112(d). The agency does not have the authority to revisit the regulatory determination, because the act of making that determination – as EPA did in December 2000 – has specific ramifications. In reviewing a similar set of actions taken by the Department of Energy (DOE), the U.S. Court of Appeals for the Second Circuit recently held that DOE could not withdraw a previously-issued efficiency standard for air conditioners, finding that a statutory prohibition on backsliding limited the authority of DOE to revisit prior conclusions.[43] The court noted that although administrative agencies can undertake regulatory proceedings to reverse prior decisions, they may be limited in how they can do so by other requirements of law.[44] Section 112 contains precisely such a provision – section 112(c)(9).

[42] *See* 69 Fed. Reg. at 4,659-60 (summarizing EPA's prior completion of first three steps).
[43] *Natural Resources Def. Council v. Abraham*, 355 F.3d 179 (2d Cir. 2004).
[44] *Id.* at 203.

Under the CAA, source categories that are listed for MACT regulation can only escape regulation if EPA finds that no individual source is a danger to health or the environment. Section 112(c)(9) states that an industry that is included on the § 112(c) list of industries for which MACT standards must be promulgated cannot be removed from the list unless EPA makes certain health and environmental findings; specifically, EPA must make:

> In the case of hazardous air pollutants emitted by sources in the category that may result in cancer in humans, a determination that no source in the category (or group of sources in the case of area sources) emits such hazardous air pollutants in quantities which may cause a lifetime risk of cancer greater than one in one million to the individual in the population who is most exposed to emissions of such pollutants from the source (or group of sources in the case of area sources).
> * * *
> In the case of hazardous air pollutants that may result in adverse health effects in humans other than cancer or adverse environmental effects, a determination that emissions from no source in the category or subcategory concerned (or group of sources in the case of area sources) exceed a level which is adequate to protect public health with an ample margin of safety and no adverse environmental effect will result from emissions from any source (or from a group of sources in the case of area sources).[45]

Thus, whether or not the Agency revises its Regulatory Determination, it cannot avoid the consequences of its decision to list, and any attempt to revisit its listing determination requires a demonstration that Utility Units are not a health or environmental concern.

Accordingly, EPA cannot now reverse course to regulate more weakly than the agency initially decided, because there is a statutory provision that limits whether EPA can reverse that decision. Of course, this kind of requirement also has a solid policy basis; as the Second Circuit observed in the air conditioner litigation discussed above, permitting the agency "unfettered discretion to amend standards . . .would completely undermine any sense of certainty on the part of manufacturers as to the required energy

[45] 42 U.S.C. §§ 7412(c)(9)(B)(i)-(ii).

efficiency standards at a given time."[46] The same is true in the case of mercury regulation. Equipment vendors need to be able to make business decisions based on EPA's regulatory commitments, and thus need to be sure that a change in political leadership will not strand their investments. Indeed, as discussed above, several companies have developed technologies, which they claim are capable of exceptional mercury removal and are ready for commercial use; EPA's proposed annulment of its actions would interfere with the pollution control equipment market by driving down demand for mercury control technology.

EPA, however, proposes to assert that its December 2000 listing of the utility industry was "without proper foundation," because "the statutory listing criteria were not met in December 2000."[47] By this, the Agency obliquely references the section 112(n) "appropriate and necessary" finding. The Agency asserts that since it has now "concluded" that regulation under section 112(d) is not "necessary," the December 2000 listing can now effectively be voided. But the Agency misreads the statute, and proposes to exert significantly more authority in this regard than the statute grants. The Agency completely ignores the point that the "statutory criteria" for listing an industrial category under section 112(c) are reflected in the language of section 112(c)(1), which requires the Administrator to publish and revise a list (based on new information) of "all categories and subcategories of major sources of the hazardous air pollutants listed in [section 112(b)]." So the threshold statutory criterion for listing an industry is simply whether or not there are major sources of HAP in the category. The definition of major source, furthermore, is a source that "emits or has the potential to 10 tons per year or more of any

[46] *NRDC v. Abraham*, 355 F.3d at 197.
[47] 69 Fed. Reg. at 4,689.

[HAP] or 25 tons per year or more of any combination of [HAPs]." 42 U.S.C. §7412(c)(1). The utility industry easily meets these criteria.

Apparently, EPA believes that its obtuse (and, as discussed below, unlawful) reading of section 112(n) of the Act as containing additional "statutory criteria for listing" of the utility industry beyond those contained in 112(c), also confers on the Agency additional authority around the delisting. The Agency asserts that in this context it can simply remove utility units from the list because its decision to change the determination is analogous to the situations in which the Agency has previously delisted industrial source categories without undertaking a 112(c)(9) analysis. The Agency is simply wrong.

First, simply because EPA has previously taken an action does not make it lawful, and section 112(c)(9) contains the only express provisions for removing source categories from the regulatory list.[48] Second, to the extent that it is ever possible to delete a category from the section 112(c) list without following section 112(c)(9), the only conceivable statutory basis for doing so is the list revision authority in section 112(c)(1), and EPA's proposal is inconsistent with that section. At most, EPA's revision authority is coextensive with its obligations to list source categories pursuant to section 112(c)(1), and thus EPA may only use this authority to delete categories if they lack major sources or if they are categories of area sources for which the health and environmental conditions are not satisfied. EPA's prior category deletion actions follow this model, inasmuch as they are premised upon changed factual circumstances particular to the listed

[48] Our research has identified no instance in which EPA's prior deletions from the source category list were subject to judicial review.

industry.[49] EPA clearly cannot assert such circumstances here – indeed, the scientific evidence developed since December 2000 points in the direction of the need for more stringent controls on power plant HAP emissions, particularly emissions of mercury.

6. EPA adopts an arbitrary reading of section 112(n)(1)(A) in order to avoid regulation under section 112.

The proposal explains that EPA "interprets the language of CAA section 112(n)(1)(A) and the limited legislative history pointing to that provision as indicating Congress' intent that Utility Units be regulated under section 112 only if the other authorities of the CAA, once implemented, would not adequately address those HAP emissions from Utility Units that warrant regulation."[50] In other words, EPA believes that section 112 regulation is a last resort for utility units, to be invoked only if it cannot devise some alternate CAA authority to "adequately" deal with such units' pollution. EPA offers three reasons in support of its interpretation, none of which bolster the agency's approach, but rather reveal that interpretation to be arbitrary and, in fact, support the opposite conclusion – that EPA must regulate under section 112.

First, EPA argues that "its interpretation is supported by the first sentence of section 112(n)(1)(A), which requires EPA to conduct a study that focuses on the hazards to public health that would exist following implementation of the other authorities of the CAA."[51] Revealingly, EPA fails to quote the second sentence of this subsection, which directly undermines the agency's conclusion.

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[49] *See* 61 Fed. Reg. 28,197, 28,200-01 (June 4, 1996) (deleting source categories with no major sources and deleting asbestos processing area source category based on "new information showing that no source or group of sources in the category emits asbestos in quantities which may cause a lifetime risk of cancer greater than one in one million"); *see also* 67 Fed. Reg. 6,521 (Feb. 12, 2002) (delisting additional source categories because no major sources existed in the industrial category); 63 Fed. Reg. 7,155 (Feb. 12, 1998) (same).

[50] 69 Fed. Reg. at 4683-84.

[51] *Id.* at 4684.

The first two sentences of section 112(n)(1)(A) read:

> The Administrator shall perform a study of the hazards to public health reasonably anticipated to occur as a result of emissions by electric utility steam generating of pollutants listed under subsection (b) of this section after imposition of the requirements of this chapter. The Administrator shall report the results of this study to the Congress within 3 years after November 15, 1990.[52]

EPA's proposal pretends that the first sentence provides support for its interpretation that Clean Air Act authorities other than section 112 can provide grounds in 2004 for adopting *prospective* regulation of HAPs from power plants as a *substitute* for section 112. This pretense is without merit. The first sentence addresses hazards from HAPs reasonably anticipated to occur after imposition of earlier or upcoming Clean Air Act requirements on utilities. The retrospective nature of this study, as well as the obligation to evaluate specific requirements that the Act imposes upon utilities, make clear that Congress was instructing EPA to study the residual public health hazards from HAPs following requirements that already had been imposed or would be adopted or proposed under the Act, by the time of the study period.[53] There is no support in this sentence for the view that Congress intended the "imposition of the requirements of this chapter" language to be an invitation to freewheeling and tortured interpretations of the statute to conceive of broad, prospective regulations beyond what was already plainly imposed by the statute or regulation. Specifically, Congress did not intend this study instruction to serve as an affirmative grant of authority to develop prospective HAP regulations as a substitute for section 112 regulation.

[52] 42 U.S.C. § 7412(n)(1)(A).
[53] The most obvious example of such requirements is the acid rain trading program, which Congress had just imposed in the 1990 Amendments. Indeed, Congressman Oxley specifically pointed to the acid rain provisions in discussing the addition of section 112(n) to the Act. 136 Cong. Rec. at E3671.

It is the second sentence of section 112(n)(1)(A) that confirms the arbitrariness of EPA's reading. Congress mandated that the study be performed by November 15, 1993, placing an inherent boundary for consideration on the CAA requirements on utilities that would have applied – or been proposed or adopted – by that date. Numerous obvious historic points are worth making: by November 1993, neither EPA nor any other party anticipated or projected the adoption of a section 111 HAP control program for utilities; EPA did not identify a section 111 HAP control program for utilities as a "[requirement] of this chapter" that would affect reasonably anticipated utility hazards in its study to Congress; and EPA's December 2000 regulatory determination did not identify a section 111 HAP control program as a basis for avoiding section 112 regulation.

Indeed, the first *mention* by EPA of a section 111 HAP control program as a purportedly available statutory authority for addressing HAPs from utilities did not come until the instant proposal in December 2003.[54] It is obvious that this occurred in no small part because the new political administration had advanced -- and failed to achieve – a 2002 and 2003 legislative agenda (the Clear Skies bill) that mirrors the section 111 proposal's design in all material respects.

With EPA itself not considering a section 111 HAP control program a "requirement of this chapter" in 1990, 1993, 1998, 2000 or up to just before December 2003, it is obvious that Congress did not envision section 111 as a basis for EPA to conclude in 1993 or today that EPA could avoid regulating utility HAPs under section 112. Congress intended MACT standards for utility units to be promulgated, at the very

[54] Indeed, as discussed elsewhere in these comments, even EPA's professional staff working on the proposal were unaware that section 111 regulation was being contemplated as late as just before the proposal's signature.

latest, by 2000,[55] with compliance three years following promulgation. It is arbitrary for EPA to conclude that Congress intended to allow EPA to avoid section 112 regulation by relying upon a regulatory approach stretched out to beyond *2025*, and one that lacks all of the stronger measures mandated by section 112 discussed above.

A second reason offered by EPA to support its interpretation echoes the first. The proposal quotes a statement by Congressman Oxley for the proposition that "Congress sought to regulate under section 112 'only those units [Utility Units] that * * * (the Administrator) determines – after taking into account compliance with all other provisions of the act * * * -- have been demonstrated to cause a significant threat of serious adverse effects on public health.'"[56] But this statement merely recognizes the same conclusion drawn above about the Congressional study instruction: by November 1993, EPA's study was to take into account "compliance" with provisions of the Act that either applied to Utility Units already or that would be known and identified by that date.[57] It is nonsensical to require EPA to factor in "compliance" with requirements that were not identified at that time, above all because EPA would have needed to quantify remaining HAP emissions to determine any threat of adverse effects. Certainly there is nothing in Oxley's statement to suggest the intention for section 112(n) to serve as an affirmative grant of broad future authority to regulate utility HAP emissions outside of section 112, as EPA has done.

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[55] *See*42 U.S.C. § 7412(e)(1)(E).
[56] 69 Fed. Reg. at 4684 (internal citations omitted).
[57] In fact, this understanding is confirmed by a telling edit that EPA makes to Oxley's statement, replacing it with a series of ellipses. The statement that the proposal selectively quotes in fact speaks of "taking into account compliance with all provisions of the act *and any other Federal, State or local regulation and voluntary emission reductions*. . . ." 136 Cong. Rec. at E3671 (omitted text italicized). This additional text makes clear that Oxley was referring to compliance with existing regulations, as well as new requirements specifically prescribed by the 1990 Amendments – such as the acid rain program – that EPA could competently evaluate in the 1993 study.

As the third and final reason in support of its interpretation that section 112 regulation is a last resort, EPA points to the final sentence of section 112(n)(1)(A), which, it says, "calls for regulation of Utility Units under section 112 only if, based on the results of the Study, EPA determines that it is both appropriate and necessary to regulate such units."[58] The statutory provision reads:

> The Administrator shall regulate electric utility steam generating units under this section, if the Administrator finds such regulation is appropriate and necessary after considering the results of the study required by this subparagraph.[59]

EPA's interpretation tramples on one of the more plain and obvious readings of this sentence – the agency has determined it to be appropriate and necessary to regulate HAP emissions from Utility Units, as evidenced by any one of EPA's three regulatory proposals and EPA's decision to proceed with regulation. Accordingly, EPA must regulate under section 112. The proposal offers no compelling statutory reason why "appropriate and necessary" should not be read according to this common understanding of these words.

EPA's proposal instead reads "necessary" to allow the agency to evade section 112 regulation "if other authorities of the CAA exist to adequately address health hazards that occur as a result of HAP emissions."[60] The agency seems to read the term "necessary" to refer back to the first sentence of section 112(n)(1)(A), which required EPA to examine the effect of other CAA requirements. However, it is more consistent with the provision's focus on "regulation under this section" to conclude that once EPA finds that *any regulation* of HAPs is appropriate and necessary – as EPA most certainly has – then section 112 regulation is required.

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[58] *Id.* at 4684.
[59] 42 U.S. § 7412(n)(1)(A).

Second, EPA's reading of this sentence rests on the same erroneous conceit underlying the agency's treatment of the first sentence of section 112(n)(1)(A) and Congressman Oxley's statement – the position that if future authorities can be imagined to address utility HAPs prospectively, then EPA may deem it no longer "necessary" to regulate under section 112. But as discussed above, the November 1993 study -- like the appropriate and necessary finding – could consider only CAA requirements that either existed or had been specifically prescribed (like the acid rain program) at the time of the study. EPA's three proposals rest on the implicit concession that existing and specifically prescribed CAA requirements – in 1993 and 2004 – still make it appropriate and necessary to regulate utility HAP emissions; so EPA is forced to manufacture the arbitrary conceit that the ability to imagine future authorities to regulate HAPs prospectively under section 111 justifies evasion of section 112 regulation.

For all the foregoing reasons, EPA's interpretation is arbitrary, capricious and an abuse of discretion.

7. EPA cannot reverse its listing of Utility Units for MACT regulation because the plain language of the CAA requires that the list contain "all" major sources of HAPs.

Section 112(c)(1) states that EPA "shall" list "all" categories of major sources of hazardous air pollutants.[61] The requirement that EPA list all major sources has an unmistakable, plain, and mandatory character.[62] In proposing to delete Utility Units from

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[60] 69 Fed. Reg. at 4684.
[61] *Id.* § 7412 (c)(1).
[62] In *NRDC v. Reilly*, 983 F.2d at 266-67, EPA attempted to argue that a requirement to promulgate rules requiring installation of on-board vapor recovery was ambiguous because another provision of the Act required a different control device until the promulgation of these rules and yet another required consultation regarding the safety of the devices. 983 F.2d at 267-271. The Court found that these requirements did not conflict with the statutory command to promulgate rules requiring on-board vapor recovery, and therefore did not render the command ambiguous.

the section 112(c) list, EPA would read the word "all" out of the statute. Such a construction is impermissible and entitled to no deference because it conflicts with plain statutory language and deprives a word in the statute of significance.[63]

There is no dispute that large utility boilers constitute a category of major sources of HAPs within the meaning of section 112(c).[64] Indeed, electric utility boilers are significant sources of toxic metals listed as hazardous air pollutants under section 112(b). Utility boilers emit, in addition to metals, substantial amounts of organic hazardous pollutants.

In view of these facts and the statutory requirement to list "*all* categories" of major sources of hazardous air pollutants as source categories under section 112(c), EPA was obliged to list large utility boilers as a section 112(c) source category.[65] Nonetheless, in promulgating the initial source category list in 1992, EPA failed to list large utility boilers as a source category. Instead, EPA listed as source categories all boilers other than large utility boilers: that is, utility boilers under 25 megawatts, as well as all non-utility boilers.[66] EPA specifically excluded *large* utility boilers from the source categories. At that time, EPA argued that it was authorized not to list large utility boilers as a section 112(c) source category based on the requirement in section 112(n)(1) directing EPA to undertake a study of public health hazards from large utility boilers.[67]

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[63] *Public Employees Retirement Sys.*, 492 U.S. at 171; *United States v. Nordic Village Inc.*, 112 S.Ct. 1011, 1015 (1992) (every word in statute must be given some operative effect).
[64] *See* Report to Congress at ES-6, Table ES-2 (over 200 tons per year of selected HAPs estimated to be emitted from characteristic coal plants); *see also* 56 Fed. Reg. 28,550-51 (EPA's request for comments assumes large utility boilers include major sources of hazardous air pollutants); 56 Fed. Reg. 28,552 (EPA's proposal to list external combustion boilers, including large utility boilers, as a source category under Section 112(c)); 57 Fed. Reg. 31,584 (EPA's preamble to final section 112(c) source category list assumes that large utility boilers meet the definition of a section 112(c) source category).
[65] *See Chevron*, 467 U.S. at 843.
[66] *See* 57 Fed. Reg. 31,584, 31,591 Table 1 & note (b) thereto.
[67] 42 U.S.C. § 7412(n)(1).

Today, EPA holds the same position, arguing in the proposal that "it would only be possible for EPA to list Utility Units under section 112(c) if it first made the section 112(n)(1)(A) finding that it was both appropriate and necessary to regulate such units under section 112, after EPA reviewed the results of its section 112(n)(1)(A) study concerning health effects and alternative control strategies."[68] For the reasons stated below, the study required by section 112(n)(1) is not inconsistent with EPA's listing obligation under section 112(c).

Section 112(n)(1) and section 112(c) have purposes that are independent. The two provisions are not inconsistent since EPA has an obvious course of action that fully complies with both sub-sections. Section 112(n)(1) required EPA to perform a study of public health hazards from large utility boilers by November 15, 1993.[69] The study was to address "the hazards to public health reasonably anticipated to occur as a result of emissions by [large utility boilers] after imposition of the requirements of [the Clean Air Act]."[70] The other provisions of the Clean Air Act applicable to large utility boilers include, for example, the acid rain provisions of the Act.[71] Section 112(n)(1) contemplated that this study would be completed before EPA decides how to regulate hazardous air pollutants under section 112 from large utility boilers, as it states: "[t]he Administrator shall *regulate* [large utility boilers] under this section, if the Administrator finds such *regulation* is appropriate and necessary after considering the results of the study required by this subparagraph."[72]

There are two reasons why section 112(n)(1) on its face is not an alternative to

[68] 69 Fed. Reg. at 4,689.
[69] 42 U.S.C. § 7412(n)(1).
[70] *Id.*
[71] *See, e.g.*, 42 U.S.C. § 7651f.

listing under section 112(c). First, section 112(n)(1) contemplates that EPA will consider the study when deciding how to *regulate* large utility boilers, not whether to *list* the boilers as a source category. Listing a source category is not equivalent to making a MACT determination for the category. The Act provides a detailed standard for determining MACT.[73] As a relative measure of the complexity of these two regulatory actions, it is noteworthy that Congress gave EPA only one year to list all source categories of hazardous air pollutants, but allowed it 10 years to complete MACT determinations for the categories.[74] Nothing in the language of section 112(n)(1) makes the public health study a precondition of EPA's listing decision under section 112(c). Furthermore, the purposes of the two provisions are independent and not inconsistent. The study required by section 112(n)(1) is meant to ensure that EPA considers information about public health hazards when, pursuant to section 112(d), it determines the content of hazardous air pollutant regulation for large utility boilers. Section 112(c) also provides the standard for EPA to exercise its discretion to delete large utility boilers as a source category of hazardous air pollutants, if the study or other information so warrants.[75] Section 112(n)(1) states that EPA shall regulate large utility boilers if it "finds such regulation appropriate and necessary."[76] This content-less standard, which is so much out of keeping with the specificity of standards that Congress imposed on EPA throughout the Act, can only be read to incorporate other applicable standards in the Act. Just as section 112(d) provides the basis for EPA to decide what type of regulation is warranted (taking into account the findings of the section 112(n)(1) study), so section

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[72] 42 U.S.C. § 7412(n)(1) (emphasis added).
[73] *See id.* § 7412(d).
[74] *Compare* 42 U.S.C. § 7412(c)(1) *with id.* § 7412(e)(1).
[75] *See* 42 U.S.C. § 7412(c)(9).

112(c)(9) provides the basis for EPA to decide whether no MACT regulation is warranted. Because these two provisions are overlapping but not inconsistent, section 112(n)(1) does not create ambiguity in the otherwise plain meaning of section 112(c).[77]

For the foregoing reasons, EPA may not revoke its decision to add Utility Units to the section 112(c) source category list without following the section 112(c)(9) delisting process.

C. Even if EPA Finalizes Its Unlawful Section 111 Program, the "Best System of Emission Reduction" Would Require Much Deeper and Faster Pollution Controls.

Although the foregoing discussion shows how EPA's proposed regulations under section 111 of the CAA are neither legally permissible nor an "adequate" substitute for section 112 MACT standards, it is clear that even if EPA were to continue on its ill-advised path, it should demand more and faster reductions from Utility Units than it has proposed to require. Even an examination of some of the more pessimistic predictions of future mercury control leads to a conclusion that EPA has chosen a regulatory program that falls far short of even the weak "best system of emission reduction" standard to which it proposes to hold itself.

EPA's Office of Research and Development (ORD) recently surveyed the state of technology development and, even though it ignores many current claims of commercial availability and does not take account of how much faster controls could be deployed if EPA adopted technology-forcing regulations, it demonstrates that the agency's section 111 program is terribly weak. ORD projects that activated carbon injection will be

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[76] *Id.* § 7412(n)(1).
[77] *See NRDC v. EPA*, 983 F.2d at 266-71.

demonstrated and capable of 90 percent control on all coal ranks by 2010,[78] and estimates that ACI can be installed in one to two years.[79] The agency concedes that these predictions represent the timing "by which the demonstration of the most difficult case (e.g., lignite) for the particular technology would be completed," so that Utility Units burning higher-rank coals could achieve such reductions earlier.[80] EPA likewise notes that the projected mercury removal rates "would add no more than about 3 mills/kWh to the annualized cost of power production."[81] In other words, by 2012, and in some cases before, EPA acknowledges that the entire coal-fired fleet of boilers could be stringently and affordably controlled.[82] In light of these facts, EPA's plan to make its second-phase cap effective in 2018, and to allow unrestricted pollution trading which will put off ultimate achievement of the cap level indefinitely, simply is too weak to meet even section 111's more flexible control requirements. It certainly falls arbitrarily short of the "superior" system of control that EPA purports to find in section 111.

Even the Energy Information Administration (EIA) has published information that calls into question EPA's apparent conclusion that its caps are the most it can reasonably ask of Utility Units. In a recent analysis, EIA compared several multipollutant legislative proposals pending before Congress, among them the Clear Skies Act introduced by Senator Inhofe and the Clean Air Planning Act introduced by

[78] U.S. EPA, Office of Research and Development, "Control of Mercury Emissions From Coal-Fired Electric Utility Boilers," at 15 (2004).
[79] *Id.* at 14.
[80] *Id.*
[81] *Id.*
[82] *See also* Memorandum from William Maxwell to Utility MACT Project Files, "Meeting with Institute of Clean Air Companies," Docket Item OAR-2002-0056-2573, at 30 (June 7, 2004) ("Technology is available today for the range of US coals and equipment. . . . ICAC therefore believes 50-70% reduction by 2008 to 2010 is feasible").

Senator Carper.[83] The Clear Skies Act is the legislative twin of EPA's mercury trading rule proposal under section 111 and the agency's IAQR proposal, with the first phase mercury cap (beginning in 2010) set at the level to be achieved as a co-benefit of smog and soot controls, and the second phase cap (beginning in 2018) set at 15 tons. The Clean Air Planning Act, meanwhile, has a first-phase cap (beginning in 2009) of 24 tons, and a second-phase cap (beginning in 2013) of 10 tons, with minimum facility-specific requirements between 50 percent (from 2009 to 2012) and 70 percent (after 2012). EIA's examination of these bills is instructive because it shows that the far more stringent Carper bill does not have significantly adverse economic effects when compared to the Inhofe bill. Specifically, EIA found:

> Under the Carper Domestic case, the wholesale price index for all fuel and power is projected to rise by less than 5 percent above the reference case throughout the implementation period. The impact on the [Consumer Price Index] is less than 0.3 percent per year, and the impact on real [Gross Domestic Product] is less than –0.1 percent per year in general, with a maximum impact of –0.11 percent in 2014.
>
> The wholesale price index for all fuel and power in the Inhofe bill rises by less than 2 percent above the reference case throughout the implementation period. The impact on the CPI is less than 0.2 percent per year, and the impact on real GDP is less than –0.06 percent per year.[84]

Importantly, these estimates reflect the projected impacts of these bills' multi-pollutant controls, so even the slight differences between the Inhofe and Carper bills noted above are not totally attributable to the Carper bill's more stringent mercury requirements (the Carper bill also has tougher limits for nitrogen oxides and sulfur dioxide, and has a control program for carbon dioxide, unlike the Inhofe bill).

[83] Energy Information Administration, "Analysis of S.1844, the Clear Skies Act of 2003; S.843, the Clean Air Planning Act of 2003; and S.336, the Clean Power Act of 2003 (May 2004).
[84] *Id.* at 39.

A similar analysis of multipollutant strategies by the Center for Clean Air Policy (CCAP) reveals that more aggressive mercury controls can reasonably be required without significant adverse impacts on power production or prices. Specifically, CCAP concluded:

> Tightening the mercury emissions-reduction cap from 15 tons in 2018 to 10 tons in 2018 is projected to increase total [three pollutant program] compliance costs by approximately 5 percent ($3.1 billion in net present value terms). Further tightening the cap by advancing the compliance date to 2015 would add approximately another 5 percent to total 3P costs, and reducing the cap to 7.5 tons in the same compliance period would increase total 3P costs by an additional 4 percent. In addition, even the most aggressive of these options (7.5 tons cap in 2015) has almost no impact on wholesale electricity prices both nationally (within 0.2 percent) and regionally (-1.5 to 2.1 percent), reflecting how the cost may not be passed on directly to wholesale electricity consumers. Cumulative mercury emission reductions increase between 8 and 28 percent through 2022 with these more aggressive caps and timetables. Moreover, the impact of such changes on national and regional coal production is slight (-1 to 5 percent).[85]

Note that these estimates reflect the net present value costs over the course of the program period from 2005 to 2030 and, therefore, annual costs will be a much smaller fraction of these totals.[86] Moreover, in contrast to EPA's claim that its trading scheme will result in the "promotion of innovation and continued evolution of production and pollution control technology," CCAP found:

> If . . . the Phase 1 target is set at a pure "cobenefits" level (i.e., at the mercury-emission level expected to be achieved as a result of deployment of only scrubbers for SO_2 control and selective catalytic reduction for NO_x control), then it is difficult to see how, in the Phase 1 the "early learning" needed to advance the technology will occur.[87]

These findings reinforce the conclusion that EPA's extended timeframes and inferior reduction targets fail to meet even the requirements of section 111.

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[85] Center for Clean Air Policy, "Design of a Multipollutant Control Program: Stakeholder Analysis of Potential Policy Options," at 40 (May 2004).
[86] *See id.* at 15 n. 20.
[87] *Id.* at 40.

Therefore, EIA's and CCAP's projections confirm that significantly greater mercury reductions are economically reasonable, while EPA's own analysis shows that high levels of mercury control are technologically feasible. As a result, EPA must conclude – should it persist in its unlawful plan to regulate mercury more slowly and less aggressively under section 111 than it is required to do under section 112 – that deeper and faster emission reductions are possible and affordable, and thus represent the "best system of emission reduction" for mercury.

IV. EPA's PROPOSED CAP AND TRADE PROGRAMS ARE CONTRARY TO LAW.

Even if EPA were justified in setting new source performance standards under section 111 for the HAPs listed in section 112(b) – and EPA is not – Section 111 does not permit a nationwide cap-and-trade program. Nor can authority for such a program be found anywhere in section 112.

A. A Cap-and-Trade Program is Impermissible Under Section 111.

EPA argues that a section 111 "standard of performance" can embrace nationwide, unrestricted, emission trading, under which plants that prefer not to install pollution controls will be able to purchase credits from companies that do clean up. Reading EPA's proposal, one would hardly know that the notion of pollution trading under CAA programs has been the subject of extensive litigation, administrative action, and legislative debate, as the agency acts as though it is writing on a virtually clean slate. However, when one considers the history of trading under the CAA, it becomes abundantly clear that EPA cannot authorize it as part of a "standard of performance" applicable to stationary sources.

1. Judicial decisions limit pollution trading under the CAA, and do not authorize the approach proposed by EPA.

EPA once tried to permit emission trading under section 111, and was rebuffed by the U.S. Court of Appeals for the D.C. Circuit. In *ASARCO, Inc. v. EPA*,[1] the court held that even the limited emission trading conceived of by the agency – which would allow existing plants to avoid section 111 standards when they made changes that increased emissions, so long as offsetting emission reductions were identified elsewhere *at the*

[1] 578 F.2d 319 (D.C. Cir. 1978).

same plant site – was inconsistent with the purpose of section 111. As the court described the statute:

> Section 111's provisions mandating New Source Performance Standards were passed because Congress feared that the system of state plans designed to keep air pollution below nationally determined levels was insufficient by itself to achieve the goal of protecting and improving air quality. The New Source Performance Standards are designed to enhance air quality *by forcing all newly constructed or modified buildings, structures, facilities, or installations* to employ [best demonstrated controls].[2]

Thus, section 111 standards of performance are supposed to apply uniformly to all pollution-generating equipment, and the notion of intra-source trading runs counter to that overall purpose. As the court noted,

> The bubble concept in the challenged regulations would undercut Section 111 by allowing operators to avoid installing the best pollution control technology on an altered facility as long as the emissions from the entire plant do not increase. For example, under the bubble concept an operator who alters one of its facilities so that its emission of some pollutant increases might avoid application of the NSPS by simultaneously equipping other plant facilities with additional, but inferior, pollution control technology or merely reducing their production. Applying the bubble concept thus postpones the time when the best technology must be employed and at best maintains the present level of emissions.[3]

Accordingly, the court struck down EPA's attempt to authorize section 111 pollution trading.

Subsequently, courts have interpreted the language in section 111 to allow or even demand limited pollution trading under the permitting programs for new and modified pollution sources. In *Alabama Power Co. v. Costle*,[4] the D.C. Circuit concluded that EPA was obliged to allow some form of *intra-source* trading to avoid the application of the Prevention of Significant Deterioration (PSD) permit requirements, in part because

[2] *Id.* at 327 (footnote omitted) (emphasis added).
[3] *Id.* at 327-28.
[4] 636 F.2d 323 (D.C. Cir. 1980).

"the PSD provisions express a purpose of ensuring that economic growth occurs in a manner consistent with preservation of clean air. The bubble concept is precisely suited to preserve air quality within a framework that allows cost-efficient, flexible planning for industrial expansion and improvement."[5] In so doing, however, the court stressed that "the offsetting changes must be within the same source, as defined by EPA."[6] The Supreme Court similarly found that the language of the CAA was open to the interpretation that trading between units at the same physical "source," but the Court defined that concept in a way that would not permit the kind of trading that EPA proposes; the Court understood "source" to be "any discrete, but integrated, operation which pollutes."[7]

Admittedly, these cases revolved around the question of the proper interpretation of the statutory term "source," and the agency's proposal focuses on the statutory term "standard of performance," but this distinction is not one that makes a difference legally. First, and most obviously, "standards of performance" apply to "sources,"[8] and interpreting "standard of performance" to allow the trading that the courts have prevented EPA from interpreting "source" to allow would render superfluous the requirement that "sources" be regulated. Second, when it amended the CAA in 1990, Congress legislated against the backdrop of these judicial decisions and while it made specific provision for trading in several parts of the statute, it did not include trading in section 111. Title IV of the 1990 amendments, for instance, has elaborate requirements mandating a program for,

[5] *Id.* at 402 (footnote omitted).
[6] *Id.*
[7] *Chevron, U.S.A., Inc. v. Natural Resources Defense Council*, 467 U.S. 837, 860-61 (1984).
[8] *See* 42 U.S.C. §§ 7411(b)(1)(B) (EPA must develop "standards of performance for new sources"); (d)(1)(A) (state plans are to "establish[ ] standards of performance for any existing source"). EPA's regulations likewise reflect the coextensive scope of the standard and the regulated equipment, defining "affected facility" for the NSPS program to mean "any apparatus to which a standard is applicable." 40 C.F.R. § 60.2.

and regulating the conduct of, trading for the purposes of reducing pollution which contributes to acid rain.[9] In addition, Congress spelled out the circumstances in which intra-source trading would be allowed in certain kinds of ozone nonattainment areas[10] and for certain sources of HAPs[11] as a means by which such facilities could make changes without making "modifications" that would subject them to stringent controls.

2. The legislative history of section 111 indicates a Congressional desire for uniform national standards, not a tradeable system of allowances.

The legislative history provides significant evidence that Congress never intended for section 111(d) to be used to promulgate a cap-and-trade pollution program. Rather, the legislative history suggests that Congress intended that *every* plant meet the same *national* emissions standard.

Regulation of existing sources under section 111(d) is based on the promulgation of "standards of performance" which the states must include in a SIP-like plan.[12] "Standard of performance" is defined in section 111(a)(1) as:

> a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any non air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.[13]

This definition applies to both new sources and existing sources.

Section 111 and the term "standard of performance" first appeared in the CAA in the 1970 Amendments.[14] The definition of "standard of performance" was amended in

[9] 42 U.S.C. §§ 7651-7651*o*.
[10] 42 U.S.C. §§ 7511a(c)(6)-(8).
[11] 42 U.S.C. § 7412(g)(1).
[12] 42 U.S.C. § 7411(d).
[13] 42 U.S.C. § 7411(a).
[14] Clean Air Amendments of 1970, Pub. Law. No. 91-604, 91st Cong., 84 Stat. 1680, sec. 4, § 111 (1970).

1977 to include a "percentage reduction requirement" for electric utility units, but in the 1990 Amendments, Congress removed this addition in order to "return to the definition in the 1970 CAA requirements."[15] Thus, the legislative history of the CAA amendments of both 1970 and 1990 can be used to try to understand the legislative intent behind section 111(d). Moreover, even though there is no legislative history about section 111(d) in particular, the same definition of "standard of performance" applies to existing sources and new sources. The legislative history about how a "standard of performance" was to be understood for new sources, therefore also illuminates what types of regulation Congress intended for existing sources.

The Conference Committee for the 1970 CAA Amendments explained that section 111 "require[s] that new major industry plants such as power plants, steel mills, and cement plants achieve a standard of emission performance based on the latest available control technology, processes, operating methods and other alternatives."[16] The Conference Committee report explains that the provision "provides for *national* standards of performance on emission from new stationary sources."[17] Furthermore, it notes that "[t]hese sources, important in themselves and involved in industries of national scope, must be controlled to the maximum practicable degree regardless of their location."[18] Senator Cooper elaborated during Senate debate that "the concept is that wherever we can afford or require new construction, we should expect to pay the cost of using the best available technology to prevent pollution."[19] Similarly, the House Report explains that

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[15] *1990 Legislative History,* at 832 (comments by William G. Rosenberg, Assistant Administrator for Air and Radiation).
[16] *Summary of Provisions of the Conference Agreement on the Clean Air Amendments of 1970*, *reprinted in 1970 Legislative History* at 130.
[17] *Id.* at 133 (emphasis added).
[18] *Id.*
[19] *1970 Legislative History* at 260.

"the emission standards shall provide that sources of such emissions shall be designed and equipped to prevent and control such emissions to the fullest extent compatible with the available technology and economic feasibility as determined by the Secretary."[20] Congress's manifested intent that every individual source meet the same standard is fundamentally inconsistent with a cap-and-trade program in which some plants would be able to operate at pollution levels higher than the technology based emissions standard because they have traded with other plants.

Moreover, although the EPA relies, here, on the term "best system" for the authority to instigate a novel regulatory scheme under section 111,[21] nothing in the legislative history suggests that Congress intended "best system" to be interpreted so broadly. To the contrary, the "best system" is consistently understood to be the best system that an individual plant could implement. For example, the Senate explained:

> "Standards of performance" . . . refers to the degree of emissions control which can be achieved through process changes, operation changes, direct emission control, or other methods. The Secretary should not make a technical judgment as to how the standard should be implemented. He should determine the achievable limits and let the owner or operator determine the most economic, acceptable technique to apply.[22]

Likewise, the legislative history of the 1990 Amendments reaffirms that Congress intended "best system" to apply to the methods of individual plants not to a novel regulatory system. For example, although Senator Simpson explained that Congress had reverted to the 1970 definition of "standards of performance" in order to give sources

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[20] H.R. Rep. No. 91-1146, *reprinted in 1970 Legislative History* at 900; *see also id.* at 1190 (statement of Dr. John Middleton Commissioner, National Air Pollution Control Administration, HEW) *("*[T]he purpose is to assure that *everybody must met the same performance requirements* for new plants wherever they are built, that requirement being the best possible control so that we being to do more than just talk about protection and enhancement of air quality.") (emphasis added).
[21] 69 Fed. Reg. at 4,686.
[22] S. Rep. No. 91-1196, at 17, *reprinted in 1970 Legislative History* at 417.

significant flexibility, he made clear that this flexibility is understood in the context of a plant meeting a specific standard:

> [Congress has] directed EPA to come up with an alternative standard that would allow utilities to meet it in the most flexible manner possible. The new standard could be met by fuel switching, the use of technology and fuel switching, by technology alone, and by intermittent controls or intermittent operation. . . . For the first time Congress has made it clear that not only technology can be considered, but the use of low-sulfur fuels may be considered as a best available control technology under the law.[23]

Thus, while it is true that there was a desire for the "best system" to be interpreted broadly, the legislative history suggests that this flexible mandate was intended to apply within the constraint of a command and control system.

B. EPA'S PROPOSED SECTION 112 CAP-AND-TRADE PROGRAMS ARE CONTRARY TO LAW.

Although EPA solicits comment on whether section 112(d) permits EPA to create a cap-and–trade program encompassing multiple sources,[24] the agency commits only a paragraph to the notion and thus seems barely to believe it is legally possible. It is not; section 112 emission standards must be as stringent as the "floor" level of control achieved in the industry, and must be met by each "source" in the category.[25] Even while interpreting the CAA to permit MACT standards to contain a limited form of emissions averaging in the Hazardous Organic NESHAP in 1994, EPA specifically concluded that the Act barred it from allowing inter-source trading, saying:

In setting the standard for a category or subcategory, the Administrator is required to determine a floor for the entire category or subcategory, and then set a standard

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[23] 1990 LH at 1149.
[24] 69 Fed. Reg. at 4,662.
[25] *See* 42 U.S.C. § 7412(d)(2) ("Emissions standards promulgated under this subsection and applicable to new or existing sources of hazardous air pollutants shall require the maximum degree of reduction in emissions of the hazardous air pollutants subject to this section. . . .")

applicable to each source within that category that is at least as stringent as the floor and requires the maximum achievable emission reductions considering certain factors. In determining whether the standard should be more stringent than the floor and by how much, the Administrator is to consider, among other factors, the cost of achieving the additional emission reductions. The statute does not limit how the standard is to be set beyond requiring that it be applicable to all sources in a category, be written as a numerical limit wherever feasible, and be at least as stringent as the floor. Therefore, the relevant statutory language is broad enough to permit the Administrator to exercise discretion to allow sources to meet MACT through the use of emissions averaging provided the standard applies to every source in the category, *averaging does not cross source boundaries*, and the standard is no less stringent than the floor.[26]

Similarly, when EPA interpreted the CAA to permit averaging between affected sources in the Primary Aluminum NESHAP, the agency concluded that it was constrained to allow such averaging:

> *only* if it can be demonstrated that the total quantity of any particular HAP that may be emitted by that portion of a contiguous major source that is subject to the NESHAP will not be greater under the averaging mechanism than it would be if each individual affected source complied separately with the applicable standard. Under this rigorous test, the practical outcome of averaging is equivalent in every respect to compliance by the discrete sources, and the statutory policy embodied in the MACT floor provisions is therefore fully effectuated. A construction of the Act which permits EPA to establish a unified compliance regimen in these limited circumstances promotes economic efficiency and has no adverse environmental consequences. In a NESHAP incorporating such a unified compliance regimen, EPA would construe compliance with the overall regimen to constitute compliance for each of the affected sources.
>
> Strict limits on the scope and nature of averaging across sources are necessary to ensure that no HAP is emitted by that portion of a major source subject to a NESHAP in quantities that are greater than those that would result from compliance by each discrete affected source within the facility. These limits include: (1) No averaging can be permitted between differing pollutants, (2*) no averaging can be permitted between sources that are not part of the same major source*, (3) no averaging can be permitted between sources within the same major source that are not subject to the same NESHAP, (4) statistical discounts must be derived and applied to account for the variability in emissions by the sources to be averaged, and (5) no averaging can be permitted between existing sources and new sources.[27]

[26] 59 Fed. Reg. 19,402, 19,426 (Apr. 22, 1994) (emphasis added).
[27] 62 Fed. Reg. 52,384, 52,388 (Oct. 7, 1997) (emphases added).

Accordingly, EPA's proposed trading program under the authority of section 112(d) is completely inconsistent with the statute's single-source focus and with the agency's own interpretations of the law.

Nor is there any legal basis in section 112(n) for EPA to authorize pollution trading. EPA, drawing on arguments directly from utility industry talking points, argues that section 112(n)(1)(A) provides EPA with affirmative authority to establish emission standards that are less stringent than the traditional MACT approach. Specifically, EPA's proposal claims:

> Congress's intent to authorize EPA to regulate Utility Unit HAP emissions in ways other than with the prescriptive requirements of section 112(d) is indicated by the section 112(n) requirement that EPA develop alternative control strategies for HAP emissions from these units. These alternative control strategies must address the hazards to public health that EPA reasonably anticipates will occur as a result of Utility Unit HAP emissions. Congress authorized EPA to consider a wider range of control alternatives for the utility sector than the source-by-source approach EPA has prescribed in standards for other source categories under the traditional section 112(d) MACT approach. Because Congress directed EPA to develop control strategies that would be alternatives to the usual section 112(d) MACT standard, it is reasonable to conclude that Congress authorized EPA to implement such alternatives.
>
> As a result, EPA believes that section 112(n) confers on the Agency the authority to develop a system-wide or pooled performance standard for HAP emissions from Utility Units.[28]

Thus, the agency seems to believe that the mere directive to examine, during a proceeding that culminated in 2000 with the issuance of the Regulatory Finding, various ways to reduce utility HAPs, also grants EPA the power, in *this* rulemaking, to prescribe something weaker than the statutory standard.

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[28] 69 Fed. Reg. at 4,661-62. *Compare id.* (EPA's proposed position) *with* Latham & Watkins, "A System-wide Compliance Alternative for Mercury Emissions from Electric Utility Steam Generating Units, Legal and Policy Basis" (September 4, 2003) at 1-5 (presenting precisely the same argument on behalf of Latham & Watkins's clients, a consortium of electric utility interests).

But the Agency's Congressionally-authorized opportunity to "develop and describe . . . alternative control strategies," actually has come and gone. The statute explicitly states that this analysis and development of alternative control strategies "shall" occur in the Adminstrator's Utility Air Toxics Study and Report to Congress – that Study and Report was completed in 1998.

To be sure, there is no language in the Act suggesting that EPA is barred from considering alternative control strategies in developing a MACT standard, but the CAA's directive to the Agency to consider "alternative control strategies" is unexceptional and certainly is not a license to walk away from the MACT regulatory scheme of section 112(d) altogether. It makes sense to study a range of control methods because the MACT program does not dictate specific technology; it directs EPA to set an emission standard reflecting the best performers in the industry, but regulated sources can meet that standard in any way they choose. That is why section 112(d)(2) specifies that MACT must be:

> achievable . . . through application of measures, processes, methods, systems or techniques including, but not limited to, measures which--(A) reduce the volume of, or eliminate emissions of, such pollutants through process changes, substitution of materials or other modifications, (B) enclose systems or processes to eliminate emissions, (C) collect, capture or treat such pollutants when released from a process, stack, storage or fugitive emissions point, (D) are design, equipment, work practice, or operational standards (including requirements for operator training or certification). . ., or (E) are a combination of the above.[29]

Accordingly, it is not surprising that EPA followed this obvious understanding when it surveyed "alternative control strategies" in the agency's Report to Congress; the agency examined precombustion controls (such as coal cleaning, gasification, and fuel switching), combustion controls (including NOx controls and boiler type),

[29] 42 U.S.C. § 7412(d)(2).

postcombustion controls (both particulate phase controls and vapor phase controls), and non-technology based options.[30] EPA did not consider, much less review the effectiveness of, a cap-and-trade scheme for HAP emissions, a fact that demonstrates that the agency did not believe that the directive to review "alternative control strategies" provided it with authority to ignore the requirement that MACT must be required on all sources.

Certainly there is no support for industry's suggestion that the language requiring EPA to "develop and describe in the Administrator's report to Congress alternative control strategies," serves as an independent and affirmative grant of authority to regulate outside of section 112(d). Most obviously, this directive is limited to what EPA does in the study – develop and describe strategies; this falls far short of a Congressional grant of jurisdiction to regulate at all, much less regulate outside of section 112(d). Moreover, this mere descriptive gloss on EPA's study obligations lacks sufficient content and legal standards to serve as a grant of jurisdiction.

It is especially absurd to contend, as some industry commenters do, that the "alternative control strategies" language provides EPA with freewheeling authority to create a Rube Goldberg regulatory cap-and-trade program with extended compliance deadlines that directly conflict with section 112(d). The detailed and intricate design of the acid rain program shows that Congress knows how to structure a cap-and-trade program when that is its intent. And for reasons discussed elsewhere in these comments, this language does not and cannot supplant mandatory section 112(d) regulation.

Even more far-fetched is industry's contention that because section "112(n) does not expressly prohibit the implementation of a national trading program as an alternative

[30] Report to Congress, at 13-33, table 13-13.

control strategy,"[31] EPA may adopt such a program. This is an unfounded view of statutory construction and the jurisdictional limits of agency authority. There are countless legal measures that section 112(n) does not prohibit or even address, but that silence hardly amounts to an independent and affirmative grant of authority to do as EPA wishes. Industry of course identifies no support or precedent for these propositions.

We cannot help but comment on the *unprecedented* irony of industry seeking to grant EPA essentially unfettered and standardless authority to create whatever regulatory program it wishes in order to addresses the risks of harm from electric utility HAP emissions. Industry pretends that in doing so EPA may adopt more cost-effective and effective controls, but there is nothing in the language that industry itself relies upon that would require EPA to do so; and the approaches that industry and EPA both support, of course, are not more effective and timely from the perspective of protecting the public against utility HAP emissions. The thinly veiled reality, of course, is that industry seeks to grant EPA such wide latitude and unfettered discretion because industry believes EPA to be receptive to adopting a weaker and unlawful program that will circumvent the more protective requirements of section 112(d).

Furthermore, the notion that section 112 might permit inter-source emission trading is fundamentally at odds with a clear statutory provision – section 112(g). That section generally provides that major HAP a source which makes a change that increases emissions must apply MACT, but it provides for an exception when "such increase in the quantity of actual emissions of any hazardous air pollutant from such source will be

[31] Robert Wyman, Claudia O'Brien & Jeffrey Hamlin, Latham & Watkins, "A National Cap-and Trade Program for the Regulation of Mercury Emissions from Electric Utility Steam Generating Units—Legal and Policy Basis," (April 21, 2004) at 6, Docket No. OAR-2002-0056-1955.

offset by an equal or greater decrease in the quantity of emissions of another hazardous air pollutant (or pollutants) *from such source* which is deemed more hazardous. . . ."[32] In other words, intra-source trading is a way for a source to avoid MACT under certain prescribed circumstances. If Congress intended for section 112 emission standards to permit inter-source trading as a way of avoiding the source-specific application of MACT, it could have done so.

In recognition of the foregoing limits on trading under sections 112(d) and (n), EPA officials repeatedly acknowledged, during the development of the present proposal, that inter-source pooled compliance schemes could not be incorporated into the standards for Utility Units. In connection with the Utility MACT Working Group, William Maxwell of the Office of Air Quality Planning and Standards made a presentation titled "MACT process," which noted, "[t]rading [is] not allowed in any consideration of the level(s) of control at the floor."[33] Similarly, Mr. Maxwell, in answering an email question fewer than three months before the proposal was signed, stated, "the MACT does not provide for a 'cap-and-trade' approach."[34] The next month, an EPA staffer participated in a presentation which noted, "[s]ection 112 does not allow trading between facilities to meet the standard. . . ."[35]

C. EPA's Trading Schemes are Contrary to Law and Arbitrary and Capricious Because they May Permit the Creation of Localized "Hotspots," and EPA adopts only a "wait-and-see" approach to this problem.

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[32] 42 U.S.C. § 7412(g)(1)(A) (emphasis added).
[33] Bill Maxwell, U.S. EPA, "Utility MACT background: MACT process," (Aug. 2001), available online at http://www.epa.gov/ttn/atw/combust/utiltox/81pres1.pdf (visited June 3, 2004).
[34] Email from William Maxwell, U.S. EPA, to Stephen Becker, Wholesale Energy Markets Group (Sept. 26, 2003) (attached as Appendix 8).
[35] Ravi K. Srivastava, U.S. EPA, et. al, "Current and Emerging Mercury and Multipollutant Control Technologies," at 4 (Oct. 14-15, 2003), available online at http://www.icac.com/controlhg/ICAC03_Srivastava.pdf (visited June 3, 2004).

Section 112 does not authorize EPA to adopt the "wait-and-see" approach it proposes in this rulemaking to the potential problem of localized heightened risk of mercury contamination ("hot spots") due to the cap-and-trade alternatives proposed. To the contrary, as described elsewhere in these comments, section 112(d) mandates the promulgation of a MACT standard which must be met by all sources in the regulated industry. It is *after* the MACT standard is in place that EPA *must* investigate and review the "risk to public healthe remaining or likely to remain from sources subject to regulation under [section 112] after the application of standards under [section 112(d)]."[36] At that point, the Administrator is mandated (in the absence of Congressional action) to issue *additional* standards if necessary to "provide and ample margin of safety to protect public health."[37]

Furthermore, EPA's proposed "wait-and-see" approach to the problem of hotspots is based on the premise that mercury will behave like sulfur dioxide.[38] Even if one were to assume that EPA's assertions that its Acid Rain program has not resulted in hot spot creation (an incorrect assumption we address in Chapter III), it is completely contrary to the science on the uptake and bioaccumulation of methylmercury to compare the public health risks of sulfur dioxide and mercury deposition. Specifically, as part of its approach to the hotspots problem, EPA proposes to look at human blood levels rather than levels of methylmercury in fish to discern whether local deposition is high.[39] But that approach would not address the issue of environmental loading of this persistent pollutant over time, provides only a snapshot of human exposure and does nt mean that

[36] 42 U.S.C. §7412(f)(1).
[37] *Id.* at 7412(f)(2).
[38] 69 Fed. Reg. 4701-4702.
[39] *Id.* at 4702.

the long-term risk for human health is any less. Moreover, the agency is not proposing to monitor actual deposition of mercury through monitors located near utility units – which would be the appropriate way to assess actual hot spot creation. While EPA correctly asserts that "the relevant question is what is the contribution of [utility units] to hot spots [will be] under a cap-and-trade approach, relative to their current contribution and their projected contribution under a traditional section 112 approach,"[40] the agency simply dismisses the problem without making the assessment or even proposing a monitoring approach that would allow it to make the assessment. EPA's dismissal of the hot spots problem therefore reflects its apparent fundamental misunderstanding of the problem – and demonstrates that the agency's approach is unsupported technically, and arbitrary and capricious.

D. If EPA Goes Forward with its Unlawful Trading Program, it Must Reject Several Program Elements That Permit Increased Pollution.

1. Utility Units emitting less than 25 pounds of mercury should not be exempted from the 2018 cap.

EPA has requested comment on whether utility units emitting less than 25 pounds of mercury should be exempted from the 2018 cap. Our response is "no". The record documents the origin of this provision and illustrates that EPA has done no analysis of this issue, either with respect to costs or impacts. The language adopted comes directly from staff at the Small Business Administration (SBA). Apparently, the SBA is concerned that small units may have difficulty reducing their mercury emissions,

[40] *Id*.

although EPA has presented no evidence that suggests this is true. Hoping to apparently bury this giveaway in the preamble, the SBA staff person writes:[41]

> [W]e are not making a formal proposal here – fuzzing up the original version will give the commenters even less of a target to focus on.
> * * *
> One solution – we could provide a memorandum in the record which addresses the releases of utilities that are 50 pounds/year and under, by individual unit, so that the commenters can draw their own conclusions.

We have reviewed EPA's memorandum documenting the units emitting less than 25 pounds of mercury and have indeed drawn our own conclusions. We conclude that of all the 396 units listed, only about 60 are standalone units. All of the others are boilers that are part of a multi-boiler facility and it is entirely likely that at some facilities all of the boilers are tied into common ductwork for pollution control. Also, because EPA is proposing to allow facilities to bubble their emissions, units other than the one or two emitting less than 25 pounds of mercury per year can be controlled to a greater extent to compensate for the lower emitting units; this option would help mitigate any concerns that small units will be costly to control. Thus, the proposal to exempt units emitting less than 25 pounds of mercury a year is simply arbitrary and capricious.

2. The "safety valve" provision should be discarded because it permits pollution levels to remain artificially high and because EPA expects it to be used to avoid pollution controls.

The proposal seeks comment on the use of a so-called "safety valve, which" would provide that, "[s]ources may purchase allowances from subsequent year budgets at the safety-valve price at any time."[42] Even though purchased safety valve allowances are

[41] Email from Kevin Bromberg, Small Business Administration to Bill Wehrum, EPA; E. Stolpe, CEQ; A. Farrell, OMB. December 15, 2003.
[42] 69 Fed. Reg. at 12,410.

deducted from the next year's allocation,[43] there does not seem to be any limit on using the safety valve to borrow yet again in the next year and the year after that, indefinitely putting off controls. Moreover, depending on how the cost of such an allowance ($2,187.50 per ounce) compares to the cost of controls, this could be a significant disincentive to pollution reduction.

Indeed, the IPM modeling EPA did of its 111 scheme reveals that the "safety valve" proposal is bad environmental policy. It is our understanding, based on discussions with EPA staff, that this model run assumed the presence of the "safety valve," and it predicts that emissions in the years 2023-2030 will be roughly 22 tons per year, rather than the cap level of 15 tons per year, and that the reason for this is "allowances purchased."[44] Accordingly, it appears that the "safety valve" permits – indeed, is predicted to result in – elevated mercury levels into the distant future.[45]

Moreover, the "safety valve" has the potential to cause delays in installing control equipment. If the price of "safety valve" allowances is significantly cheaper than pollution controls, the source may never install control equipment. Similarly, the "safety valve" provision could encourage the purchase of allowances that would worsen the problem posed by local hot spot deposition of mercury.[46] If a local power plant, unwilling

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[43] *See* proposed 40 C.F.R. § 60.4143(c) (69 Fed. Reg. at 12,447).

[44] Again, as noted above, the model output says that 2026 is the end year and should not be used for analysis, so it is unclear to us whether the "safety valve" will be used as the model predicts in 2026 and beyond.

[45] See also Energy Information Administration, "Analysis of S.1844, the Clear Skies Act of 2003; S.843, the Clean Air Planning Act of 2003; and S.336, the Clean Power Act of 2003, at vii (May 2004) ("For Hg, power sector emissions are projected to remain above the 2018 target level in the Inhofe case [which is very similar to EPA's proposed mercury trading program] throughout the projection period. . . . The above-target-level emissions in the later years are caused by the mercury allowance price safety valve.")

[46] The best source of information on the issue of local vs. global deposition of mercury is contained in EPA's report to Congress for the instant rulemaking, U.S. EPA Mercury Study Report to Congress 1 & 2-5 (1997)(EPA 452-R-97-003) and the Florida Dep't of Envtl Protection, Integrating Atmospheric Mercury Deposition With Aquatic Cycling in South Florida (2002, rev. 2003) available at http://www.floridadep.org/labs/mercury/docs/flmercury.htm (visited June 28, 2004).

to spend the money to control mercury emissions, is encouraged to purchase allowance by the "safety valve" price and thus continues to pollute, this dynamic could create an area around the plant of higher mercury emissions than those areas surrounding plants that control emissions. EPA does not even address the possibility of localized problems associated with the "safety valve" provision, but it is a very real concern. For example, a utility owner can decide that an old, large coal-fired (and very dirty) plant is ready for retirement, but rather than retire it right away, decide to buy allowances at "safety valve" prices for a several years.

In addition, another problem with this approach is that it creates a huge paradox associated with the continual borrowing of future allowances without ever reconciling the borrowed allowances from future compliance periods. As written, it appears as though EPA anticipates that a plant can comply by purchasing allowances into the future.

V. EPA HAS FAILED TO MEET THE REQUIREMENTS OF SEVERAL EXECUTIVE ORDERS

A. EPA Has Utterly Failed to Undertake a Rigorous Economic Analysis of Alternative MACT Regulatory Options Pursuant to Executive Order 12866 (Regulatory Planning and Review).

Executive Order 12866 (Regulatory Planning and Review) requires, for each significant regulatory action, that the relevant agencies must prepare an

> "assessment, including the underlying analysis, of costs and benefits of potentially effective and reasonably feasible alternatives to the planned regulation, identified by the agencies or the public (including improving the current regulation and reasonably viable nonregulatory actions), and an explanation why the planned regulatory action is preferable to the identified potential alternatives."[1]

The Order also asserts that "in deciding how to regulate, agencies should assess all costs and benefits of available regulatory alternatives," and that "[i]n choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety and other advantages; distributive impacts; and equity."[2] E.O. 12866 further states that "costs and benefits shall be understood to include both quantitative measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify but nevertheless essential to consider."[3] In promulgating its MACT regulation for utility units, therefore, EPA "shall assess both the costs and the benefits of the intended regulation and recognizing that some costs and benefits are

[1] Executive Order 12866, Regulatory Planning and Review § 6(a)(3)(C), 58 Fed. Reg. 51,735 (September 30, 1993).
[2] *Id.* § 1.
[3] *Id*.

difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation outweigh its costs."[4]

After President Clinton signed E.O.12866, an interagency group spent two years reviewing and assessing the "state of the art for economic analyses of regulatory actions," and published "Economic Analysis of Federal Regulations Under Executive Order 12866 (January 11, 1996),[5] a policy directive describing best practices for performing the analyses required by the Executive Order. Executive Order 12866, and the 1996 Economic Analysis guidelines require the Agency to consider the most important alternative approaches to the identified problem and to provide analysis supporting the reasons for selecting the proposed regulatory action over identified alternatives.

EPA has failed to follow this approach in this proposed rule.[6] First, the Agency does not seriously evaluate alternative approaches to the MACT floor (for example a MACT floor developed on the basis of no subcategorization, or subcategorization based on process type rather than fuel rank). Second, the Agency does no assessment of alternative above-the-floor options for most Utility Units, except to provide excuses for why its standards ignore available techniques. Instead, the Agency adopts an approach to MACT, develops a floor, and determines in setting the standard not to go beyond the floor (based on little or no analysis of available process alternatives, pre-combustion methods or even control technologies). At that point, the Agency engages in a superficial "cost and benefit assessment" of the MACT standard against the section 111 cap and trade alternative. That assessment has none of the rigor of the analysis advanced in the

[4] *Id.* § (1)(b)(6).
[5] Available at http://www.whitehouse.gov/omb/inforeg/riaguide.html.

1996 Economic Analysis guidelines and required by E.O. 12866 (the "E.O. 12866 approach").

Rigorous analysis, however not only is directed by Executive Order, but also allows the public to understand and comment on the Agency's rulemaking proposal. Indeed, EPA has included such analyses in the record for other significant recent rulemakings, including the NOx SIP Call and its recent non-road heavy-duty diesel engine proposal.[7] EPA's failure to do so here epitomizes the arbitrary nature of EPA's proposal – the Agency has not identified and evaluated any legitimate alternatives to its MACT approach but has simply selected a MACT without analyzing it against others.

1. Undertaking a rigorous economic analysis using the E.O. 12866 Approach demonstrates that more stringent MACT emissions standards are achievable.

To demonstrate that more stringent mercury emission rates are feasible and highly cost-effective, and that such reductions will provide substantial additional human health benefits, CATF, with the assistance of ICF Consulting and MSB Energy Associates, has evaluated the benefits and costs of tighter mercury emission rates than those proposed by EPA. The alternative emission rates were derived, as described in section II.B.3.c of Chapter II, by taking EPA's methodology to account for variability in coal characteristics and removing those statistical adjustments that EPA unjustifiably used to arrive at the permissive emission limits it proposed. The resulting "Alternate Mercury Control Scenario" is consistent with EPA's approach of basing subcategories on fuel rank and implementing the standard in 2008. Moreover, it also assumes, as EPA does, that the

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[6] *See* 69 Fed. Reg. 4652, 4712 (describing limited E.O. 12866 approach); *see also id*. at 4706-4712 (reporting a minimal economic analysis comparing the preferred section 111 approach with the Agency's flawed MACT alternative, but failing to analyze various alternative MACT scenarios).
[7] *See, e.g.*, 63 Fed. Reg. 57,356 *et seq*.; 68 Fed. Reg. 28,328 *et. seq.*

MACT floor is the standard, *i.e.* it does not assume that any beyond-the-floor levels are justified.

It should be noted again that these emission rates do not represent MACT. As we argue above, there is no justification for a fuel-rank based subcategorization scheme, and there is ample evidence that beyond-the-floor techniques exist and should have been evaluated in setting a MACT standard for Utility Units, at least with respect to mercury. We adopt EPA's own perspective in order to demonstrate, through a rigorous E.O. 12866 approach, that alternative emission rates to EPA's MACT are cost-effective. EPA's failure to complete the assessment denies the public this information.

The alternative emission rates we evaluated against EPA's proposed MACT standards are standards representing 90 percent mercury reduction (measured as a reduction from the mercury content in the input coal) for bituminous-fired units, 1.5 lbs./TBtu for subbituminous units and 4.5 lbs./TBtu for lignite-fired units. The 90 percent level was specified for bituminous-fired units because EPA's Integrated Planning Model (IPM) cannot simulate reductions any higher than 90 percent. Also, we did not separately model IGCC or waste-fired units as there are only 4 units total in these two subcategories. Mercury trading was not permitted as part of the modeled scenario.

The "Alternate Mercury Control Scenario" also integrates EPA's proposed Interstate Air Quality Rule (IAQR) requirements, reflecting the emissions control investments that would be made assuming that both IAQR and MACT must be implemented. This is the "real world" scenario that electric power generators will face.

a. Alternate Mercury Control Scenario Analysis Methodology.

In conducting this analysis, we again used the methods and procedures used by EPA. Specifically, ICF Consulting evaluated the Alternative Mercury Control Scenario using the same IPM used by EPA to evaluate the mercury co-benefits of the IAQR[8] and Clear Skies proposal. This model predicts emission levels and costs of the Alternative Mercury Control Scenario. Because EPA failed to model a regulatory alternative that represented the IAQR plus EPA's proposed MACT emission rates (IAQR+ EPA MACT), we also modeled this scenario.

We determined incremental emission reductions and costs of the Alternative Mercury Control Scenario by comparing the emissions and costs from the Alternative Mercury Control Scenario to EPA's IAQR alone and to the IAQR + MACT regulatory scenario.

The more stringent alternative mercury emission rates resulted in additional reductions in SO_2 emissions beyond the IAQR and IAQR + EPA MACT base cases. Because EPA has not monetized any of the benefits specific to mercury control, however, we were only able to estimate the incremental benefits resulting from the Alternate Mercury Control Scenario based on estimated avoided deaths from $PM_{2.5}$ exposure. We utilized modeled values for avoided deaths per ton of SO_2 pollution removed generated from EPA's benefits analysis in the IAQR by directly applying these estimates to the SO_2 emissions inventories derived from the IPM runs for the Alternate Mercury Control Scenario. The estimated incremental health benefits were converted to dollar benefits by applying EPA's IAQR estimate of the value of a statistical life (VSL) to the number of

estimated avoided deaths. This approach results in an underestimation of the incremental benefits of the Alternate Mercury Control Scenario, since there are many benefits from reduced mercury levels that have not been monetized as well as other benefits, in addition to avoided premature death, from reduced $PM_{2.5}$ levels. This methodology has been developed by EPA for use in situations where time and resource constraints preclude detailed modeling (e.g., EPA's recent recreational engine rulemaking).[9] CATF's application of the methodology is described in further detail in Appendix 6.

b. Alternate Mercury Control Scenario Analysis Results.

The results of the CATF analysis of an Alternate Mercury Control Scenario are summarized in this section.[10] The results demonstrate that more stringent mercury emission rates are feasible, cost-effective, and produce substantial incremental benefits well in excess of incremental costs. The Alternate Mercury Control Scenario contains subcategories identical to those proposed by EPA and an implementation date of 2008, as required by section 112 of the Clean Air Act. We also note that while the benefits of the Alternate Mercury Control Scenario are substantial, they are lower than the benefits that would be expected to result from the stringent mercury MACT emission rates we urge EPA to adopt in these comments, as described in section II.B.3.c of Chapter II. Nevertheless, the benefits of these alternate rates reveal that EPA's far weaker proposal is arbitrary and capricious.

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[8] In its January 28, 2004 Memo to the Docket entitled "Analysis of the Marginal Cost of SO_2 and NOx Reductions," EPA states "IPM is a more sophisticated model of the power sector developed by ICF that EPA uses for much of its analysis of the power sector."

[9] *See, e.g.,* U.S. EPA, "Final Regulatory Support Document: Control of Emissions from Unregulated Nonroad Engines," EPA420-R-02-022, at § 10.2.1 (November 8, 2002), available online at http://www.epa.gov/otaq/regs/nonroad/2002/r02022k.pdf (visited June 29, 2004).

[10] A more detailed summary and cost specifications for both the Alternate Control Scenario (IPM run CATF-14) and the IAQR+EPA MACT scenario (IPM run CATF-20) are set forth in Appendix 7 hereto.

Below, we compare the IPM model outputs for the Alternate Mercury Control Scenario with similar modeling of EPA's IAQR and IAQR + EPA MACT requirements. We performed our own analysis of the IAQR + EPA MACT alternative because EPA did not provide this relevant analysis for public review and comment.

i. Projected National Power Plant Emissions

National power plant emissions projected from the Alternate Mercury Control Scenario as well as EPA's IAQR and IAQR + EPA MACT proposals are summarized in Table V-1.

Table V-1. Air Emissions by Year for Different Mercury Control Scenarios

	2005	2010	2015	2020
Proposed IAQR				
SO2 (thousand tons)	8.2	6.1	5.4	4.3
NOx (thousand tons)	3.8	2.6	2.3	2.3
Mercury (tons)	48.5	42.2	40.7	38.1
Proposed IAQR + EPA MACT				
SO2 (thousand tons)	11.6	4.8	4.2	3.7
NOx (thousand tons)	3.8	2.4	2.3	2.2
Mercury (tons)	46	26	25	23
Alternate Mercury Control Scenario (includes EPA's IAQR proposal)				
SO2 (thousand tons)	11.6	4.1	4.1	4.0
NOx (thousand tons)	3.8	2.2	2.3	2.3
Mercury (tons)	46	12	12	12

As shown, the Alternate Mercury Control Scenario not only reduces mercury emissions to a far greater extent, it does so much more rapidly than the current proposal (as represented by the IAQR + EPA MACT estimates). The Alternate Mercury Control Scenario mercury emissions are about 54 percent below the IAQR + EPA MACT proposal in 2010 and 48 percent less in 2020. The sulfur dioxide emissions that result

from the Alternate Mercury Control Scenario are also less than the IAQR + EPA MACT levels from 2010 until 2020.

ii. Alternate Mercury Control Scenario Benefits

As shown in Table V-2, the Alternate Mercury Control Scenario reduces particulate-related deaths to a greater extent than predicted EPA's IAQR alone. The monetized benefit of these avoided deaths is also shown in Table V-2.[11]

Table V-2. Incremental Avoided PM-Related Deaths from Alternate Mercury Control Scenario

Alternate Mercury Control Scenario	**2010**	**2015**	**2020**
Avoided Deaths (relative to IAQR)	5,191	4,465	1,096
Monetary Benefits Avoided Deaths (relative to IAQR in 1999$)	$28 billion	$26 billion	$7 billion

iii. Alternate Mercury Control Scenario Costs

Total production costs and mercury reductions relative to EPA's Reference Case are shown in Table V-3 below for the Alternate Mercury Control Scenario, as well as for EPA's IAQR and IAQR + EPA MACT proposals.

Table V-3. Annual Costs and Mercury Reductions of the Alternate Mercury Control Scenario, IAQR and IAQR + EPA MACT

[11] We will submit benefits information for the IAQR+EPA MACT scenario in supplemental comments.

	Hg (tons reduced relative to EPA reference case of 52.7 tons in 2010)		Total Annual Electricity Production Costs (billion $1999)	
	2010	**2020**	**2010**	**2020**
IAQR	10.5	14.6	$89.1	$113.3
IAQR + EPA MACT	26.7	29.7	$91.4	$115.0
Alternate Mercury Control Scenario	40.7	40.7	$94.1	$115.6

Table V-4 below shows the incremental cost of the Alternate Mercury Control Scenario, relative to EPA's IAQR proposal, and the IAQR+MACT scenario.

Table V-4. Incremental Costs of the Alternate Mercury Control Scenario

Alternate Mercury Scenario Incremental Costs Relative To:	2010	2020
IAQR	$5 billion	$2.3 billion
IAQR + EPA MACT	$2.7 billion	$0.6 billion

We note that these costs are overestimates for a number of reasons. First, as EPA has documented, the cost of activated carbon (the principal cost driver) is expected to decrease by at least 40 percent if a sufficiently stringent MACT is enacted and production of activated carbon increases.[12] Second, the IPM model assumes that control technologies are static. That is, mercury control technologies, represented by activated carbon injection in the IPM, never advance beyond the effectiveness or costs of controls that have been demonstrated over the past several years. A more realistic assumption would assume that technology would continue to prove more effective and be less costly (as is being demonstrated by the new technologies being introduced). Third, the model does not allow, and EPA does not address, the improvements in mercury capture that can

be achieved by optimizing conventional controls. Fourth, while the best performing units use fabric filter technology, the IPM does not offer fabric filters as a retrofit option to achieve mercury control. In fact, the model offers no options that would allow a plant to achieve more than 90 percent mercury control. Consequently, the costs estimated by the IPM should be considered conservative (high) estimates.

The benefits of the Alternate Mercury Control Scenario emissions reductions beyond those resulting from EPA's IAQR and Clear Skies proposals are clearly cost-beneficial. The Alternate Mercury Control Scenario benefits exceed costs relative to the proposed IAQR by 5.6 to 1 in 2010 and by 3 to 1 in 2020 – even where costs are likely overstated.

iv. Emissions Controls Installed

We project that the Alternate Mercury Control Scenario will result in the installation of 101,830 MW of activated carbon injection (ACI) retrofits by 2010, compared to 16,762 MW of ACI retrofits by 2010 for the IAQR + EPA MACT proposal. Consistent with these findings, the Energy Information Administration found that if Senator Carper's Clean Air Planning Act were to be adopted, "ACI fabric filter systems are expected to be the key compliance strategy for reducing mercury emissions," and estimated that "[b]y 2025, between 139 gigawatts and 142 gigawatts of capacity are projected to be retrofitted with ACI fabric filter systems in the Carper cases."[13] By contrast, EIA predicted that Senator Inhofe's bill, which parallels EPA's proposed

[12] U.S. EPA, 2004. Control of mercury emissions from coal-fired electric utility boilers. Air Pollution Prevention and Control Division, National Risk Management Research Laboratory, Office of Research and Development.

[13] Energy Information Administration, "Analysis of S.1844, the Clear Skies Act of 2003; S.843, the Clean Air Planning Act of 2003; and S.336, the Clean Power Act of 2003, at 21 (May 2004).

mercury trading program, "the mercury removal requirement can be achieved without the need for ACI fabric filters. . . ."[14]

v. Coal Consumption by Rank for Alternate Mercury Control Scenario

As shown in Table V-6, the Alternate Mercury Control Scenario results in slight shifts toward more bituminous coal use and moderate declines in sub-bituminous and lignite coal use. As shown, a similar shift is observed for the IAQR + EPA MACT proposal. Virtually any regulatory approach will cause a shift in the regulated market and related markets – in this rulemaking a shift in amount and type of coal consumed will occur whatever regulatory option is chosen. As we describe, the public health and environmental benefits of near-term and significant mercury reductions resulting from selecting an alternative like the Alternate Mercury Control Scenario far outweigh the impacts related to coal market shifts.

Table V-6. Coal Consumption by Coal Rank (TBtu)

Coal Consumption by Coal Rank (TBtu)				
Alternate Mercury Control Scenario	**2005**	**2010**	**2015**	**2020**
Bituminous	14,054	15,776	16,137	16,191
Subbituminous	5,556	4,404	4,375	4,445
Lignite	951	961	931	894
IAQR + EPA MACT Proposal				
Bituminous	14,109	15,053	15,337	15,985
Subbituminous	5,552	5,094	5,075	4,645
Lignite	951	944	917	870

[14] *Id.*

vi. Coal Use by Electric Power Sector for Alternate Mercury Control Scenario

Table V-7 summarizes coal use by region for the electric power sector. Results from the Alternate Mercury Control Scenario are compared with the IAQR + EPA MACT proposal. As shown in Table V-7, the Alternate Mercury Control Scenario shifts some coal production from Appalachia and the West to the Interior region. This is similar to the coal shifts predicted for the IAQR + EPA MACT. The Alternate Mercury Control Scenario reduces coal use in 2020 by less than 1 percent compared to the IAQR + EPA MACT proposal, to a level that would be about 6 percent above current (2001) electric power generation coal consumption.

Table V-7. Coal Use by Electric Power Sector by Region

Region Coal Production by year (Million Tons) – Alternate Mercury Control Scenario				
Coal Region	**2005**	**2010**	**2015**	**2020**
Appalachia	319	324	319	309
Interior	178	236	243	243
West	489	437	447	460
National	**985**	**997**	**1009**	**1012**
Region Coal Production by Year (Million Tons) - IAQR + EPA MACT				
Coal Region	**2005**	**2010**	**2015**	**2020**
Appalachia	320	315	321	311
Interior	178	212	228	235
West	489	476	465	468
National	**987**	**1003**	**1014**	**1014**

vii. Projected Retail Electricity Prices for Alternate Mercury Control Scenario

Table V-8 shows the retail electricity prices of the more stringent Alternate Mercury Control Scenario and the IAQR + EPA MACT proposal by power region. The Alternate Mercury Control Scenario results in a long-term electricity price increase of

about one-half cent per kilowatt hour (or 7 percent) for all power regions in the U.S. compared to the IAQR + EPA's MACT.

Table V-8. Projected Retail Electricity Prices

Power Region	Main States Included	Retail Prices (Cents Per Kwh - $1999)			
		IAQR + EPA MACT		*Alternate Mercury Scenario*	
		2010	**2020**	**2010**	**2020**
ECAR	OH, MI, IN, KY, WV, PA	5.43	5.91	5.46	5.91
ERCOT	TX	5.56	6.68	5.60	6.67
MAAC	PA, NJ, MD, DC, DE	6.14	7.53	6.12	7.51
MAIN	IL, MR, WI	5.53	6.45	5.59	6.47
MAPP	MN, IA, SD, ND, NE	5.48	5.01	5.65	5.10
NY	NY	8.29	9.11	8.29	9.09
NE	VT, NH, ME, MA, CT, RI	7.48	8.56	7.50	8.58
FRCC	FL	7.29	7.00	7.34	7.01
STV	VA, NC, SC, GA, AL, MS, TN, AR, LA	5.76	5.66	5.83	5.66
SPP	KS, OK, MR	5.33	5.76	5.39	5.79
PNW	WA, OR, ID	5.08	4.87	5.09	4.88
RM	MT, WY, CO, UT, NM, AZ, NV, ID	6.38	6.62	6.42	6.62
CALI	CA	9.69	9.78	9.69	9.78
National	Contiguous Lower 48 States	6.14	6.53	6.19	6.54

viii. Mine Mouth Coal Prices and Henry Hub Natural Gas Prices for Alternate Mercury Control Scenario

Table V-9 summarizes the mine mouth coal prices and Henry Hub natural gas prices for both the Alternate Mercury Control Scenario and the IAQR + EPA MACT proposal. As shown, coal prices under the more stringent alternate mercury control scenario are essentially unchanged compared to the IAQR + EPA MACT. In addition, the price of natural gas is also essentially unaffected by the more stringent scenario.

Table V-9. Mine Mouth Coal Prices and Henry Hub Natural Gas Prices

Minemouth Coal Prices by year (1999$/MMBtu)				
Coal Region – Alternate Scenario	**2005**	**2010**	**2015**	**2020**
Appalachia	0.91	0.83	0.80	0.78
Interior	0.8	0.74	0.68	0.64
West	0.38	0.40	0.38	0.37
National Avg. Coal Prices – Alternate Scenario	**0.65**	**0.64**	**0.61**	**0.58**
Coal Region – IAQR + EPA MACT	**2005**	**2010**	**2015**	**2020**
Appalachia	0.91	0.83	0.80	0.77
Interior	0.81	0.72	0.67	0.64
West	0.38	0.38	0.36	0.36
National Avg. Coal Prices – IAQR + EPA MACT	**0.66**	**0.62**	**0.59**	**0.57**
Henry Hub Gas Prices [US $/MMBtu]				
	2005	**2010**	**2015**	**2020**
Alternate Mercury Control Scenario	2.90	3.15	3.01	2.92
IAQR + MACT	2.87	3.13	3.01	2.93

c. Summary: The Benefits of the Alternate Mercury Control Scenario Far Outweigh the Costs

The Alternate Mercury Control Scenario we have presented results in an increase in the total cost of electricity production of $5 billion in 2010 and $2.3 billion in 2020,

relative to the IAQR alone. Compared to EPA's IAQR + MACT proposal, incremental cost increases in electricity production are $3.8 billion in 2010 and $0.6 billion in 2020. These costs are more than offset by the total estimated benefits of the Alternate Mercury Control Scenario of $28 billion in 2010 and $6.9 billion in 2020. In addition, as noted above, the 11 health and welfare benefits EPA identified which are associated with reducing mercury emissions were not quantified; only the health benefits resulting from reducing $PM_{2.5}$ were quantified. Consequently, the additional benefits of reducing mercury would be *even higher* than the benefits estimated here. In the MACT proposal, EPA in fact states that they believe the benefits of reducing mercury emissions "are large enough to justify substantial investment in mercury emission reductions."[15]

Typically a measure is considered cost-effective if it produces greater benefits than costs. The Alternate Mercury Control Scenario is certainly cost-effective. In 2010, the benefits of the Alternate Mercury Control Scenario exceed costs by a factor of almost 6 to 1. This illustrates that even more stringent mercury emission limits are cost-effective. The EPA must analyze and consider additional, more stringent mercury control scenarios to fulfill its obligations under the CAA and Executive Order 12866.

In summary, tighter mercury emission limits than EPA proposed – even if developed using EPA's coal rank subcategories and other assumptions -- will result in relatively insignificant increased costs to the power sector compared with EPA's IAQR + MACT emissions rate proposal, while at the same time providing thousands of avoided premature deaths, and billions of dollars in benefits.

[15] 69 Fed. Reg. at 4711

B. EPA Also Has Failed To Comply With Executive Order 13045 "Protection of Children From Environmental Health Risks and Safety Risks"

Compounding its error in failing to follow the E.O. 12866 approach to economic analysis of a range of MACT standards, EPA also has failed to follow Executive Order 13045, titled "Protection of Children From Environmental Health Risks and Safety Risks."[16] This failure is particularly egregious in light of the fact that the Agency has declared that developing fetuses and children are at the highest risk with respect to adverse effects of mercury contamination.[17]

In the preamble to the proposed rule, EPA explains that Executive Order 13045 applies to any rule that (1) is determined to be "economically significant" as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children.[18] If the regulatory action meets both criteria, Section 5-501 of E.O.13045 directs the Agency to evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives.

> In a draft proposal submitted to the White House's Office of Management and Budget, (OMB), EPA argued that E.O. 13045 did not apply because the decisions in the rulemaking were to be based upon control technology, not health and safety risks.[19]

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[16] 62 Fed. Reg. 19883 (April 23, 1997).
[17] *See* 65 Fed. Reg. at 79,829 ("The developing fetus is considered most sensitive to the effects from methylmercury; therefore, women of childbearing age are the population of greatest concern. * * * It is also possible that children exposed after birth are also potentially more sensitive to the toxic effects of methylmercury than adults because their nervous systems are still developing.")
[18] 69 Fed. Reg. 4,715
[19] *See e.g.*, Interagency Review Comments, Docket Item OAR-2002-0056-0107, at 522.
[22] *Id.* at 523; 69 Fed. Reg. at 4,715.

The record shows that, during the interagency review process, this justification was deleted and instead the following statement was suggested, which subsequently appeared in the preamble to the proposed rule:

> "In accordance with the Order, the Agency evaluated the environmental health and safety effects of the proposed rule and for the reasons explained above, the Agency believes that the proposed strategies are preferable to other potentially effective and reasonably feasible alternatives."[22]

This change says that EPA *did* evaluate effects of the rule on children pursuant to this E.O.13045 – but the record demonstrates that EPA in fact *did not* undertake such analysis. EPA's draft proposal says just the opposite: that the proposal is not subject to the Executive Order. This is no "wordsmithing," nor is it a subtle change based on reinterpretation of data by scientists or economists. This is a blatant and misleading representation of what EPA did with respect to assessing the impacts of the proposed rule on children's health, and with respect to following the directives of an Executive Order.

Not only did EPA fail to undertake any analysis of the impact of its proposed MACT or the section 111 cap and trade alternative on children's health, it also, as discussed above, failed to conduct any analysis of the impacts of its proposed MACT against other MACT standard approaches (i.e. of "other potentially effective and reasonably feasible alternatives"). Because of this failing, the proposed strategies can hardly be considered "preferable" as discussed in section 5-501(b) of E.O. 13045. This example is but one of many that illustrate how EPA's proposed language was changed to minimize the health risks of mercury exposure.[23]

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[23]See New York Times, April 7, 2004, White House Minimized the Risks of Mercury in Proposed Rules, Scientists Say, Jennifer 8, Lee, available at http://www.nytimes.com/2004/04/07/politics/07MERC.html?ex=1082345607&ei=1&en=a93dad350cc3c163